



MSMR

A publication of the Armed Forces Health Surveillance Center



MEDICAL SURVEILLANCE MONTHLY REPORT

2007 ANNUAL SUMMARY ISSUE

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Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE APR 2008		2. REPORT TYPE		3. DATES COVERED 00-00-2008 to 00-00-2008	
4. TITLE AND SUBTITLE Medical Surveillance Monthly Report (MSMR). Volume 15, Number 3, April 2008				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Center for Health Promotion and Preventive Medicine, Armed Forces Health Surveillance Center (AFHSC), 2900 Linden Lane, Suite 200, Silver Spring, MD, 20910				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 32	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Hospitalizations among members of active components, U.S. Armed Forces, 2007

This report documents frequencies, rates, and characteristics of hospitalizations of members of the active components of the U.S. Armed Forces during calendar year 2007. Summaries are based on standardized records of hospitalizations in military medical facilities as well as non-military facilities (if the care was reimbursed through the Military Health System). The primary reasons for hospitalizations are summarized based on the first three digits of the ICD-9-CM codes that were reported as primary (first-listed) discharge diagnoses. Hospitalizations not routinely documented with standardized, automated records (e.g., during deployments, field training exercises, shipboard) are not included in this summary.

Frequencies, rates, and trends:

During 2007, there were 77,209 reports of hospitalizations of active component service members (**Table 1**) — thirty percent of the hospitalizations were in non-military facilities (**Figure 1**). The hospitalization rate (all causes) was 56.7 per 1,000 service members per year. The rate in 2007 was slightly higher (+2.7%) than in 2006 and the second highest rate since 1997 (**Figure 1**).

Hospitalizations, by illness and injury categories:

In recent years, there has been remarkable consistency in the distribution of hospitalizations in relation to their primary causes (at the major diagnostic category level) (**Table 1**). For example, in 2007 compared to 2003, the same six major diagnostic categories of the ICD-9-CM were the leading causes of hospitalizations; in the past five years, only one of the 16 major diagnostic categories changed frequency

rank order by more than one ("other": ICD-9-CM: V00-V72, E81-E99). As in the past, in 2007, three diagnostic categories accounted for more than one-half (53.1%) of all hospitalizations: pregnancy-related conditions (including labor and delivery) (21.2%), mental disorders (16.7%), and injuries and poisonings (15.2%) (**Table 1**).

Between 2003 and 2007, the numbers of hospitalizations increased in four, and decreased in four, of the eight major categories that accounted for the most hospitalizations (**Table 1**). During the period, the largest increases in attributable hospitalizations were for mental disorders (2007 vs. 2003: n change: +2,876; % change: +28.7%) and "other" non-illness or injury-specific diagnoses (V and E codes of the ICD-9-CM), including rehabilitation therapy (2007 vs. 2003: n change: +1,346; % change: +88.2%). Among major diagnostic categories overall, the largest relative decreases in attributable hospitalizations in the past five years were for diseases of the respiratory system (2007 vs. 2003: % change: -21.4%) and infectious and parasitic diseases (2007 vs. 2003: % change: -17.3%) (**Table 1**).

Hospitalizations, by gender:

In 2007, the hospitalization rate (all causes) was 3.4-times higher among females than males (hospitalization rate, overall: females: 143.3 per 1,000 person-years [p-yrs]; males: 42.2 per 1,000 p-yrs). With exclusion of pregnancy-related hospitalizations (which accounted for 58.2% of all hospitalizations of females), the crude hospitalization rate among females (59.9 per 1,000 p-yrs) was 42% higher than among males.

Table 1. Hospitalizations, ICD-9 diagnostic categories, US Armed Forces, 2003, 2005, and 2007

Major diagnostic category (ICD-9-CM)	2003		2005		2007	
	No.	(Rank)	No.	(Rank)	No.	(Rank)
Pregnancy complications (630-679)	17,784	(1)	17,169	(1)	16,333	(1)
Mental disorders (290-319)	10,019	(3)	11,244	(3)	12,895	(2)
Injury and poisoning (800-999)	11,005	(2)	12,175	(2)	11,744	(3)
Musculoskeletal system (710-739)	6,322	(5)	6,799	(5)	6,772	(4)
Digestive system (520-579)	7,059	(4)	6,909	(4)	6,609	(5)
Signs, symptoms and ill-defined conditions (780-799)	4,660	(6)	4,762	(6)	4,174	(6)
Other (E81-E99 and V01-V82)	1,526	(12)	2,671	(9)	2,872	(7)
Respiratory system (460-519)	3,305	(7)	3,066	(7)	2,599	(8)
Genitourinary system (580-629)	2,993	(8)	2,841	(8)	2,590	(9)
Circulatory system (390-459)	2,364	(9)	2,636	(10)	2,542	(10)
Neoplasms (140-239)	1,974	(10)	2,160	(12)	2,208	(11)
Skin and subcutaneous (680-709)	1,892	(11)	2,177	(11)	2,031	(12)
Nervous system and sense organs (320-389)	1,082	(14)	1,170	(14)	1,256	(13)
Infectious and parasitic diseases (001-139)	1,484	(13)	1,280	(13)	1,228	(14)
Endocrine, nutrition, metabolic, immunity (240-279)	719	(15)	1,027	(15)	728	(15)

Hospitalization rates were higher among males than females for injuries and poisonings (male:female, rate ratio [RR]: 1.62; rate difference [RD]: 3.51 per 1,000 p-yrs), skin and subcutaneous tissue disorders (male:female, RR: 1.26; RD: 0.32 per 1,000 p-yrs), circulatory disorders (male:female, RR: 1.22; RD: 0.34 per 1,000 p-yrs), and musculoskeletal/connective tissue disorders (male:female, RR: 1.19; RD: 0.80 per 1,000 p-yrs). Hospitalization rates were higher among females than males for all other major diagnostic categories. The largest absolute differences in hospitalization rates between females and males were for genitourinary disorders (RD: 7.01 per 1,000 p-yrs) and mental disorders (RD: 3.68 per 1,000 p-yrs).

Relationships between age and hospitalization rates varied across diagnostic categories (Figure 2). For example, among both males and females, hospitalization rates for neoplasms, circulatory disorders, and musculoskeletal and connective tissue disorders sharply increased with age; in contrast, hospitalization rates for mental disorders sharply decreased with age (Figure 2, page 6).

Most frequent diagnoses:

In 2007, seven diagnoses (as specified by three-digit codes of the ICD-9-CM) accounted for more than 1,000 hospitalizations each among males: adjustment reactions (n=3,075), affective psychoses (n=2,624), intervertebral disc disorders (n=1,806), symptoms involving the respiratory system and chest (n=1,423), acute appendicitis (n=1,490), other cellulitis and abscess (n=1,311), and alcohol dependence syndrome (1,026) (Table 2). Of particular note, from 2006 to 2007, hospitalizations of males for both affective psychoses and alcohol dependence syndrome increased by more than 45%.

As in the past, in 2007, diagnoses associated with pregnancy,

labor, and delivery caused the most hospitalizations by far among females (Table 3). Other than conditions related to pregnancy, leading causes of hospitalizations among females were affective psychoses (n=795), adjustment reactions (n=695), uterine leiomyoma (n=429), depressive disorder (242), and other symptoms involving the abdomen/pelvis (n=241) (Table 3).

Injuries and poisonings:

In 2007, injuries and poisonings accounted for more hospitalizations of U.S. service members than any other category of diagnoses except pregnancy-related conditions and mental disorders (Table 4, page 8). Of injury and poisoning-related hospitalizations with documented "causes," more than one-eighth (13.3%) were reportedly inflicted intentionally (e.g., enemy weapons; suicide gestures/attempts; fights, assaults, legal interventions); of those, approximately 70% were reported as "battle casualties". As in the past, the most frequently reported causes of unintentional injuries/poisonings were "falls and miscellaneous," complications of medical/surgical care, guns and explosives (including accidents during war), land transportation accidents, and athletics (Table 4).

As in the past, the diagnoses that caused the most injury and poisoning-related hospitalizations varied by gender. Among both males and females, "other complications of procedures, not elsewhere classified" caused more injury and poisoning-related hospitalizations than any other specific diagnosis (Tables 2,3). However, among males, the next most frequent causes of injury and poisoning-related hospitalizations were fractures of bones of the ankle, face, leg, and forearm (Table 2); among females, the next most frequent causes of injury and poisoning-related hospitalizations were

Figure 1. Rate of hospitalization by calendar year, U.S. Armed Forces, 1996-2007

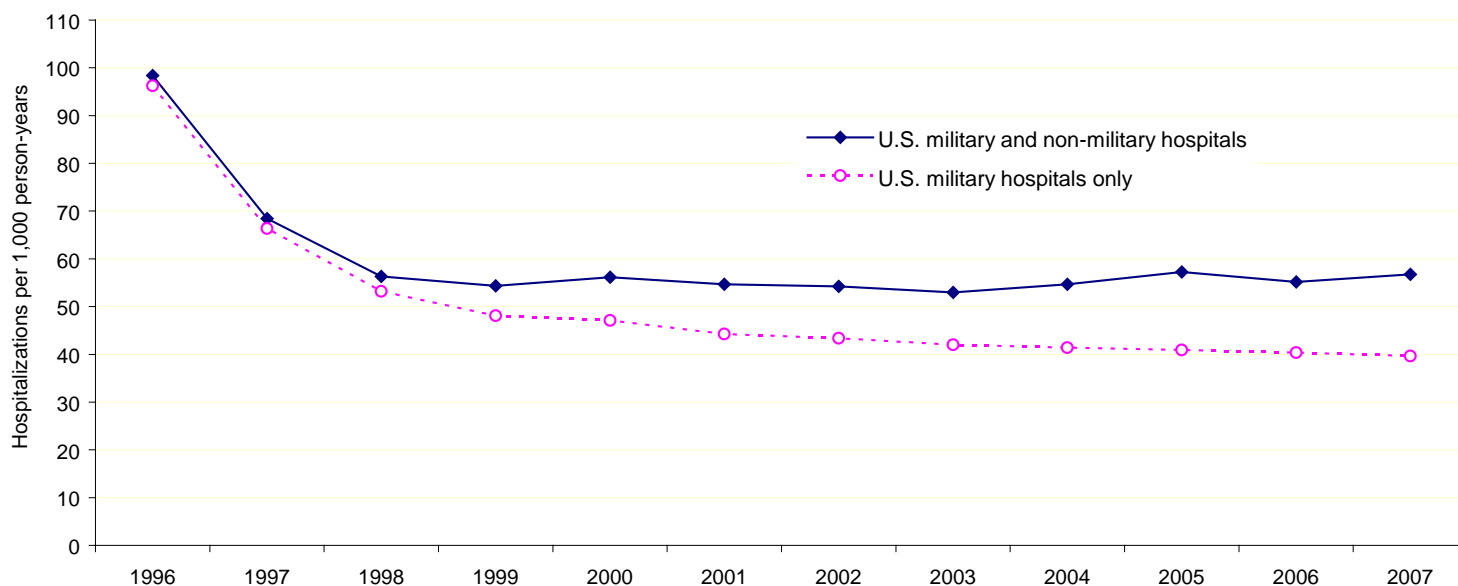
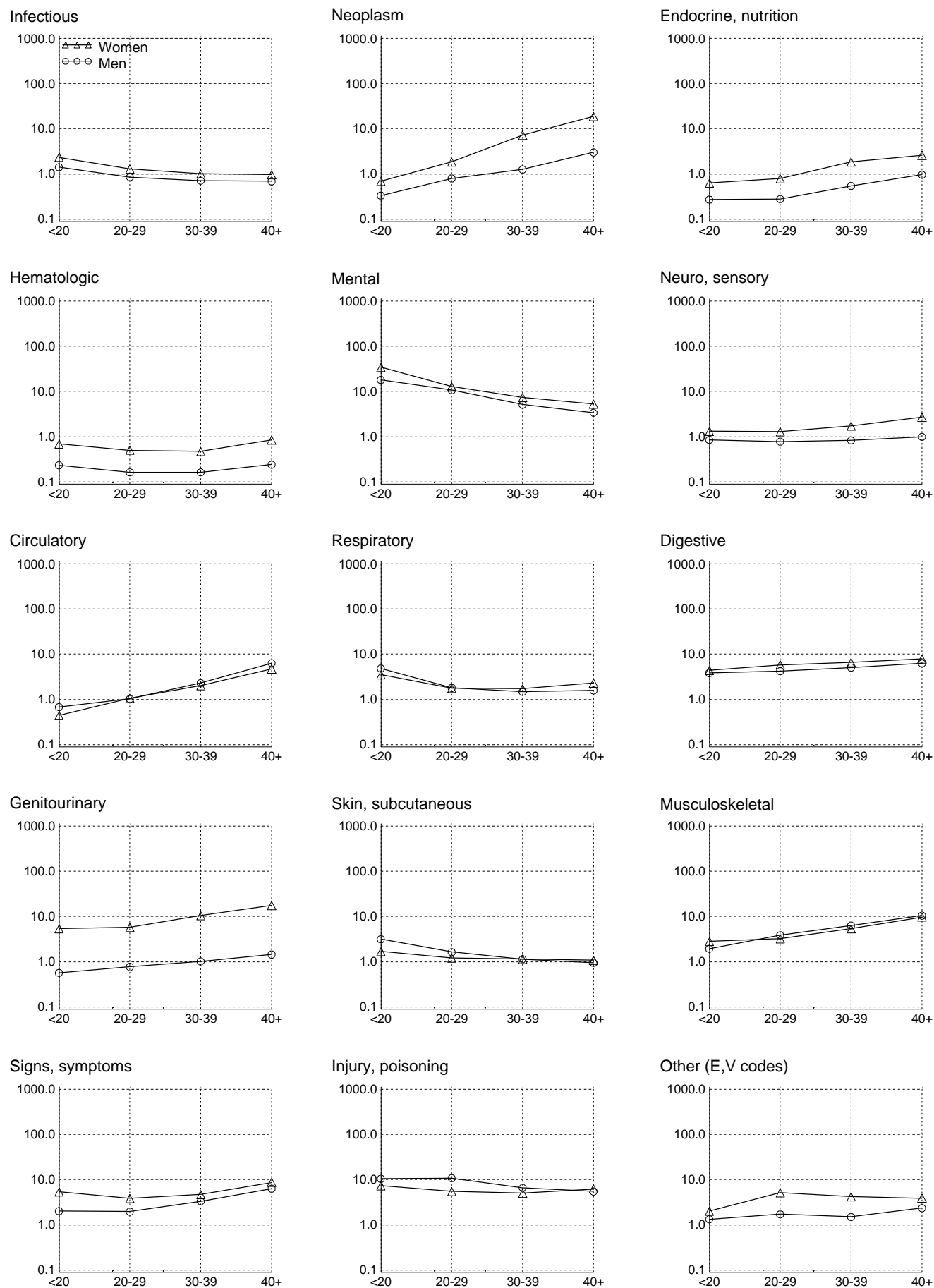


Table 2. Most frequent diagnoses during hospitalization, by major diagnostic category, **males**, U.S. Armed Forces, 2007

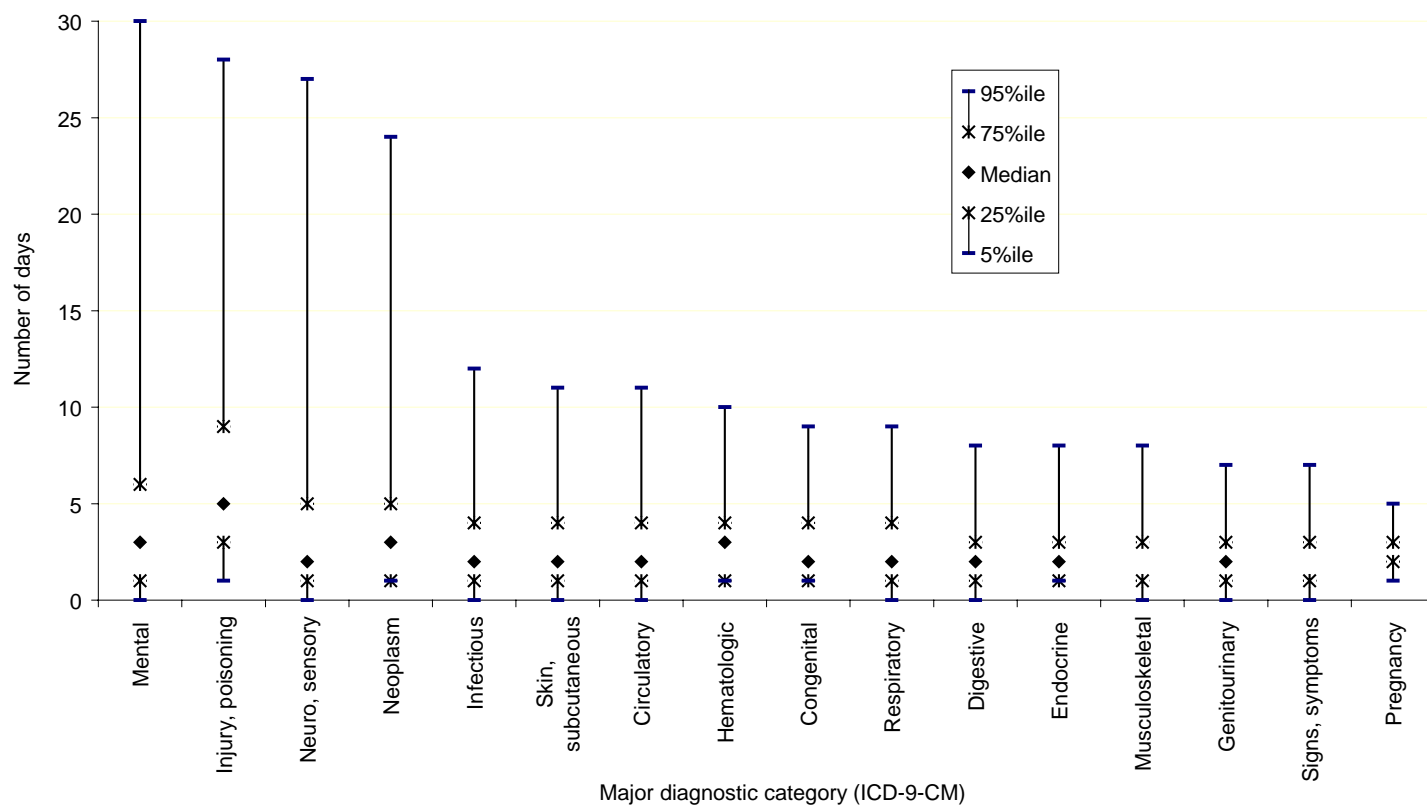
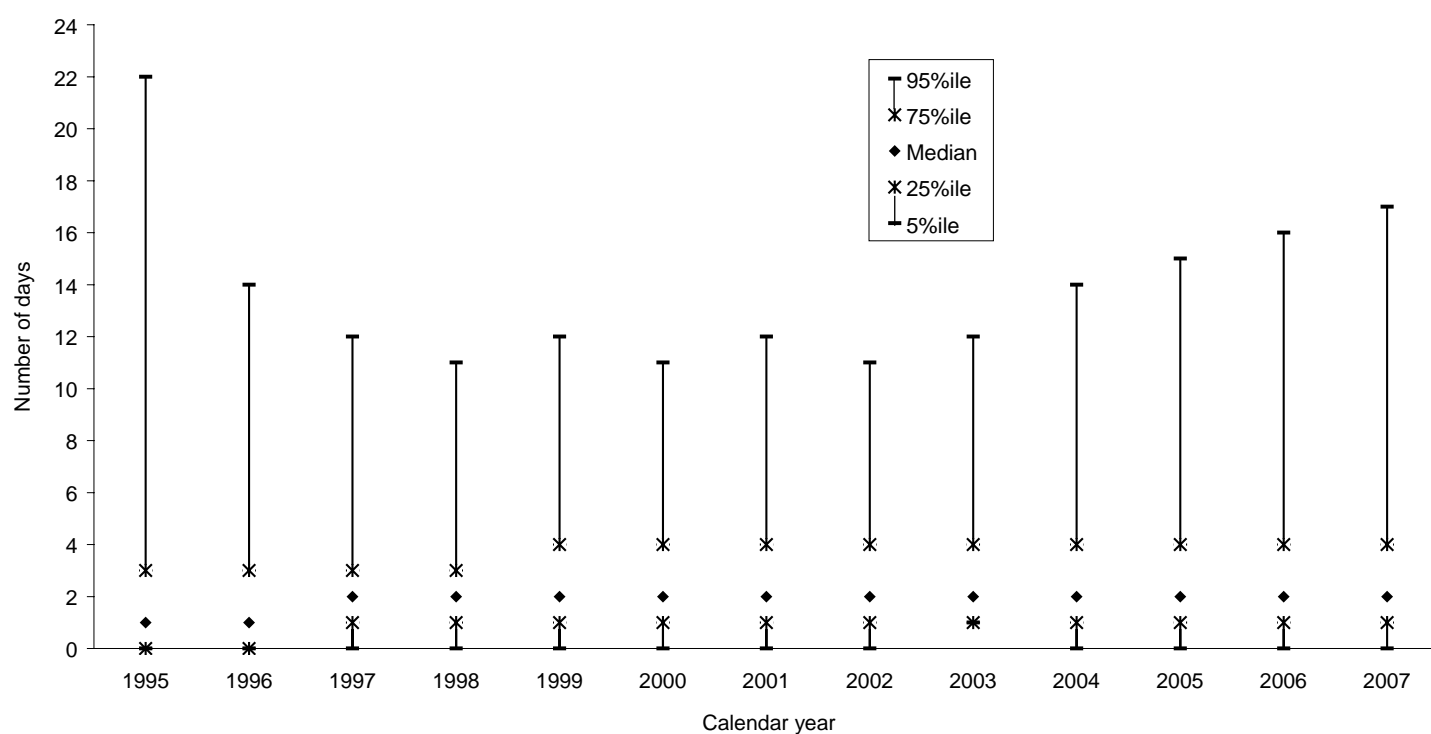
Diagnostic category (ICD-9-CM codes)	No.	%	Diagnostic category (ICD-9-CM codes)	No.	%
Infectious and parasitic diseases (001-139)	977		Digestive system (520-579)	5,417	
Meningitis due to enterovirus	167	17.1	Acute appendicitis	1,490	27.5
Intestinal infections due to other organisms	134	13.7	Diseases of esophagus	370	6.8
Viral & chlamydial infection	104	10.6	Dentofacial anomalies, including malocclusion	327	6.0
Septicemia	84	8.6	Other noninfective gastroenteritis and colitis	306	5.6
Ill-defined intestinal infections	57	5.8	Cholelithiasis	293	5.4
Neoplasms (140-239)	1,315		Genitourinary system (580-629)	1,043	
Cancer of prostate	85	6.5	Calculus of kidney and ureter	325	31.2
Cancer of testis	78	5.9	Acute renal failure	142	13.6
Cancer of brain	77	5.9	Other disorders of male genital organs	86	8.2
Cancer of thyroid gland	68	5.2	Urethral stricture	75	7.2
Lymphoid leukemia	59	4.5	Other disorders of kidney and ureter	74	7.1
Endocrine, nutrition, immunity (240-279)	494		Skin and subcutaneous tissue (680-709)	1,792	
Diabetes mellitus	148	30.0	Other cellulitis and abscess	1,311	73.2
Disorders of fluid, electrolyte, acid-base balance	86	17.4	Pilonidal cyst	152	8.5
Nontoxic nodular goiter	45	9.1	Cellulitis and abscess of finger and toe	102	5.7
Disorders of lipid metabolism	41	8.3	Other disorders of skin and subcutaneous tissue	51	2.8
Thyrotoxicosis with or without goiter	29	5.9	Other local infections of skin and subcutaneous	31	1.7
Hematologic disorders (280-289)	205		Musculoskeletal system (710-739)	5,932	
Other and unspecified anemias	44	21.5	Intervertebral disc disorders	1,806	30.4
Other diseases of blood & blood-forming organs	42	20.5	Internal derangement of knee	667	11.2
Purpura and other hemorrhagic conditions	39	19.0	Other derangement of joint	541	9.1
Iron deficiency anemias	24	11.7	Other disorders of bone and cartilage	434	7.3
Aplastic anemia	19	9.3	Other and unspecified disorders of back	297	5.0
Mental disorders (290-319)	10,424		Congenital anomalies (740-759)	258	
Adjustment reaction	3,075	29.5	Other congenital musculoskeletal anomalies	69	26.7
Affective psychoses	2,624	25.2	Anomalies of bulbus cordis, cardiac septal closure	25	9.7
Alcohol dependence syndrome	1,026	9.8	Other congenital anomalies of circulatory system	23	8.9
Depressive disorder, NEC	741	7.1	Congenital anomalies of urinary system	23	8.9
Nondependent abuse of drugs	719	6.9	Congenital anomalies of ear, face and neck	20	7.8
Nervous system and sense organs (320-389)	957		Signs, symptoms, ill-defined conditions (780-799)	3,271	
Epilepsy	120	12.5	Symptoms involving respiratory system, chest	1,423	43.5
Migraine	118	12.3	General symptoms	784	24.0
Other conditions of brain	73	7.6	Other symptoms involving abdomen and pelvis	391	12.0
Other paralytic syndromes	58	6.1	Symptoms involving head and neck	157	4.8
Mononeuritis of upper limb, mononeuritis multiplex	50	5.2	Symptoms involving digestive system	130	4.0
Circulatory system (390-459)	2,234		Injury and poisoning (800-999)	10,644	
Cardiac dysrhythmias	416	18.6	Other complications of procedures, NEC	820	7.7
Essential hypertension	214	9.6	Fracture of ankle	542	5.1
Other forms of chronic ischemic heart disease	212	9.5	Fracture of face bones	503	4.7
Acute myocardial infarction	177	7.9	Fracture of tibia and fibula	449	4.2
Acute pulmonary heart disease	172	7.7	Fracture of radius and ulna	363	3.4
Respiratory system (460-519)	2,218		Other (E81-E99 and V01-V82)	1,978	
Pneumonia, organism unspecified	623	28.1	Other and unspecified aftercare	590	29.8
Peritonsillar abscess	160	7.2	Care involving use of rehabilitation procedures	559	94.7
Deviated nasal septum	142	6.4	Other orthopedic aftercare	192	34.3
Asthma	138	6.2	Observation & eval, suspected condition not found	146	76.0
Pneumothorax	127	5.7	Attention to artificial openings	94	64.4

Table 3. Most frequent diagnoses during hospitalization, by major diagnostic category, **females**, U.S. Armed Forces, 2007

Diagnostic category (ICD-9-CM codes)	No.	%	Diagnostic category (ICD-9-CM codes)	No.	%
Infectious and parasitic diseases (001-139)	251		Digestive system (520-579)	1,192	
Meningitis due to enterovirus	39	15.5	Acute appendicitis	169	14.2
Viral & chlamydial infection	36	14.3	Cholelithiasis	166	13.9
Intestinal infections due to other organisms	31	12.4	Dentofacial anomalies, including malocclusion	123	10.3
Septicemia	27	10.8	Other noninfective gastroenteritis and colitis	76	6.4
Herpes simplex	20	8.0	Diseases of pancreas	63	5.3
Neoplasms (140-239)	893		Genitourinary system (580-629)	1,547	
Uterine leiomyoma	446	49.9	Menstrual disorder, other abnormal bleeding	231	14.9
Cancer of thyroid gland	79	8.8	Pain & other symptoms with female genitalia	205	13.3
Benign neoplasm of ovary	58	6.5	Noninflammatory disorder ovary, fallopian tube	179	11.6
Cancer of female breast	33	3.7	Infections of kidney	161	10.4
Carcinoma in situ of breast, genitourinary system	21	2.4	Inflammatory disease ovary, fallopian tube, pelvis	136	8.8
Endocrine, nutrition, immunity (240-279)	234		Pregnancy complications (630-679)	16,319	
Nontoxic nodular goiter	51	21.8	Trauma to perineum and vulva during delivery	4,297	26.3
Disorders of fluid, electrolyte, acid-base balance	39	16.7	Other current conditions complicating pregnancy	1,124	6.9
Obesity and other hyperalimentation	35	15.0	Maternal abnormality of organs and soft tissues	1,029	6.3
Thyrotoxicosis with or without goiter	23	9.8	Abnormality of forces of labor	1,008	6.2
Diabetes mellitus	18	7.7	Hypertension complicating pregnancy, childbirth	925	5.7
Hematologic disorders (280-289)	106		Skin and subcutaneous tissue (680-709)	239	
Iron deficiency anemias	37	34.9	Other cellulitis and abscess	141	59.0
Other and unspecified anemias	30	28.3	Pilonidal cyst	29	12.1
Purpura and other hemorrhagic conditions	24	22.6	Other disorders of skin and subcutaneous tissue	12	5.0
Other diseases of blood & blood-forming organs	6	5.7	Disorders of sweat glands	9	3.8
Coagulation defects	5	4.7	Cellulitis and abscess of finger and toe	8	3.3
Mental disorders (290-319)	2,471		Musculoskeletal system (710-739)	840	
Affective psychoses	795	32.2	Intervertebral disc disorders	215	25.6
Adjustment reaction	695	28.1	Other derangement of joint	85	10.1
Depressive disorder, NEC	242	9.8	Internal derangement of knee	84	10.0
Neurotic disorders	159	6.4	Other disorders of bone and cartilage	64	7.6
Alcohol dependence syndrome	140	5.7	Other and unspecified disorders of joint	53	6.3
Nervous system (320-389)	299		Signs, symptoms, ill-defined conditions (780-799)	903	
Migraine	89	29.8	Other symptoms involving abdomen and pelvis	241	26.7
Epilepsy	33	11.0	Symptoms involving respiratory system, chest	218	24.1
Other conditions of brain	25	8.4	General symptoms	209	23.1
Other, unspecified disorders of nervous system	20	6.7	Symptoms involving digestive system	52	5.8
Multiple sclerosis	14	4.7	Symptoms involving head and neck	43	4.8
Circulatory system (390-459)	308		Injury and poisoning (800-999)	1,100	
Cardiac dysrhythmias	57	18.5	Other complications of procedures, NEC	183	16.6
Acute pulmonary heart disease	41	13.3	Poisoning by analgesics, antipyretics, antirheumatics	83	7.5
Essential hypertension	34	11.0	Fracture of ankle	67	6.1
Hemorrhoids	18	5.8	Poisoning by psychotropic agents	56	5.1
Occlusion of cerebral arteries	17	5.5	Complications with specified body systems NEC	46	4.2
Respiratory system (460-519)	381		Other (E81-E99 and V01-V82)	894	
Pneumonia, organism unspecified	77	20.2	Outcome of delivery	377	42.2
Asthma	46	12.1	Other and unspecified aftercare	133	14.9
Acute tonsillitis	34	8.9	Observation & eval, suspected condition not found	70	7.8
Peritonsillar abscess	23	6.0	Care involving use of rehabilitation procedures	50	5.6
Other diseases of lung	22	5.8	Normal pregnancy	47	5.3

Figure 2. Rate of hospitalizations,* by major diagnostic categories, by age and gender, U.S. Armed Forces, 2007

*Rates expressed as hospitalizations per 1,000 person-years.

Figure 3. Length of hospital stay, by major diagnostic category, U.S. Armed Forces, 2007**Figure 4.** Length of hospital stay, by year, U.S. Armed Forces, 2007

poisonings (by analgesics, antipyretics, antirheumatics, and psychotropic agents), ankle fractures, and complications of “specified procedures” (Table 3).

Durations of hospitalization:

As in previous years, in 2007, median durations of hospitalization varied across diagnostic categories – from one day (for “signs, symptoms, and ill-defined conditions” and musculoskeletal/connective disorders) to five days (for injuries and poisonings) (Figure 3). For all other diagnostic categories, the median durations of hospitalization were two to three days (Figure 3).

As in the past, there was significant variability across diagnostic categories in the ranges of durations of hospitalization (Figure 4). For example, in 2007, approximately 5% of all hospitalizations for mental disorders were longer than 28 days, while fewer than 5% of hospitalizations for pregnancy-related conditions, musculoskeletal and connective tissue disorders, and genitourinary disorders exceeded seven days. In general, the durations of hospitalizations of service members have remained fairly stable since 1996; however, the durations of the most extreme 5% of all hospitalizations have been steadily increasing since 2002 (Figure 4).

Table 4. Injury hospitalizations by causal agent,* U.S. Armed Forces, 2007

Cause	No.	% of total
Unintentional	6,790	57.8
Fall and miscellaneous	1,976	16.8
Guns, explosives (includes accidents during war)	1,266	10.8
Complications of medical/surgical	1,105	9.4
Land transport	849	7.2
Athletics	531	4.5
Poisons and fire	398	3.4
Machinery, tools	270	2.3
Air transport	204	1.7
Environmental	169	1.4
Water transport	22	0.2
Intentional	1,564	13.3
Battle casualty	1,114	9.5
Self-inflicted	319	2.7
Non-battle, inflicted by other (e.g., assault)	131	1.1
Missing/invalid code	3,390	28.9

*Causal agents determined by codes IAW STANAG 2050.

Ambulatory visits among members of active components, U.S. Armed Forces, 2007

This report documents frequencies, rates, and characteristics of ambulatory visits of active component members of the U.S. Armed Forces during calendar year 2007. Ambulatory visits of U.S. service members in fixed military and non-military (reimbursed through the Military Health System) medical treatment facilities are documented with standardized, automated records. These records are routinely archived for health surveillance purposes in the Defense Medical Surveillance System which is the source of data for this report. Records of ambulatory visits not documented with automated records (e.g., during deployments, field training exercises, shipboard) are not included.

For this report, all records of ambulatory visits of U.S. service members in 2007 were categorized based on the first three digits of the primary (first-listed) diagnosis code (International Classification of Diseases, 9th revision, clinical modifications [ICD-9-CM]). The diagnosis code V70.5 "health examination of defined subpopulations" is routinely recorded as the primary diagnosis when the illness or injury that is the principal reason for the visit is considered by the patient and/or care provider to be deployment-related. Thus, for this analysis, when V70.5 was the first-listed diagnosis, the second-listed diagnosis was used instead.

Frequencies, rates, and trends

During 2007, there were 13,561,722 reported ambulatory visits of active component service members (Table 1). The crude annual rate (all causes) was 9,966 visits per 1,000

service members – i.e., approximately 10 clinic visits per person (Figure 1). The rate of documented ambulatory visits in 2007 was slightly higher (+3.9%) than in 2006 – and more than 60% higher than in 1998 (Figure 1).

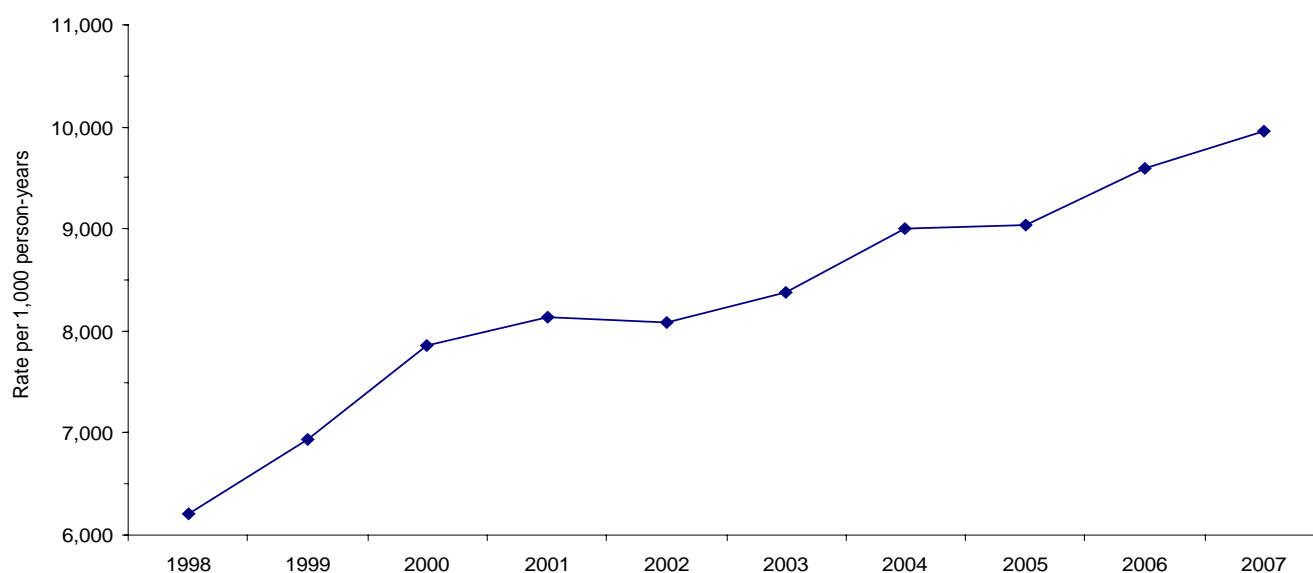
In 2007, nearly one-half (44.6%) of all ambulatory visits were for "other contact with health services." This category (indicated by "V" codes of the ICD-9-CM) includes health care not related to a current illness or injury (e.g., counseling, immunization, deployment-related health assessment, routine and special medical examination, e.g., periodic, occupational, retirement) as well as ongoing treatment for illness or injury (e.g., physical therapy). Three V-coded diagnoses accounted for nearly half of the visits in this category: general health examination (18.3%), care involving use of rehabilitation procedures (17.5%) and special investigations and examinations (10.9%) (Tables 2,3).

In 2007, there were 7,507,964 documented ambulatory visits for illnesses and injuries (ICD-9-CM: 001-999). The crude annual rate for illness and injury-related visits was 5.52 visits per person per year (p-yr). The rate of ambulatory visits for illnesses and injuries in 2007 was approximately 15% higher than in 2003 and 2005 (Table 1).

Distribution of visits, by diagnostic categories

In 2007, the illness and injury-related categories that accounted for the most ambulatory visits were musculoskeletal and connective tissue disorders (23.7%), mental disorders (12.3%), injuries and poisonings (11.5%), "signs, symptoms and ill-defined conditions" (10.6%), and nervous system and

Figure 1. Rate of ambulatory visits by calendar year, U.S. Armed Forces, 1998-2007



sense organ disorders (10.5%) (**Table 1**). As in the past, nearly one-half (47.5%) of all illness and injury-related visits were due to musculoskeletal and connective tissue disorders, injuries and poisonings, and mental disorders (**Table 1**).

With a few notable exceptions, over the past 5 years, the relative distributions of ambulatory visits by diagnostic categories remained fairly stable. However, between 2003 and 2007, the number of visits for mental disorders increased by 55%, while those for infectious and parasitic diseases decreased by 24%. In terms of attributable visits, mental disorders increased from seventh to second, and infectious and parasitic diseases decreased from ninth to eleventh, among the 16 illness and injury-related diagnostic categories (**Table 1**).

From 2005 to 2007, there were increases in the number of visits for each illness and injury-related category except infectious and parasitic diseases (visits, 2007 vs. 2005: -28,523) and diseases of the respiratory system (visits, 2007 vs. 2005: -28,100) (**Table 1**). The largest absolute increases in attributable visits from 2005 to 2007 were for musculoskeletal and connective tissue disorders (visits, 2007 vs. 2005: +295,951) and mental disorders (visits, 2007 vs. 2005: +236,066).

Ambulatory visits, by gender

In 2007, males accounted for three-fourths (75.9%) of all illness and injury-related visits; however, the annual crude rate among males (4.89 visits per p-yr) was approximately one-half the rate among females (9.26 visits per p-yr). As in the past, rates were higher among females than males for every illness and injury-related category (**Figure 2**).

The same five illness and injury-specific diagnoses (at the 3-digit level of the ICD-9-CM) accounted for the most ambulatory

visits among both males and females (**Tables 2,3**). For each of the most frequently reported diagnoses, the rate was higher among females than males: other/unspecified disorders of joints (rates [per 1,000 p-yrs], female: 525.6; male: 325.2; rate ratio [RR]: 1.62); other/unspecified disorders of the back (rates, female: 392.0; male: 241.7; RR: 1.62); disorders of refraction and accommodation (rates, female: 353.4; male: 228.7; RR: 1.55); adjustment reactions (rates, female: 295.2; male: 176.6; RR: 1.67); and acute upper respiratory infections of multiple or unspecified sites (rates, female: 216.6; male: 123.7; RR: 1.75) (**Tables 2,3**).

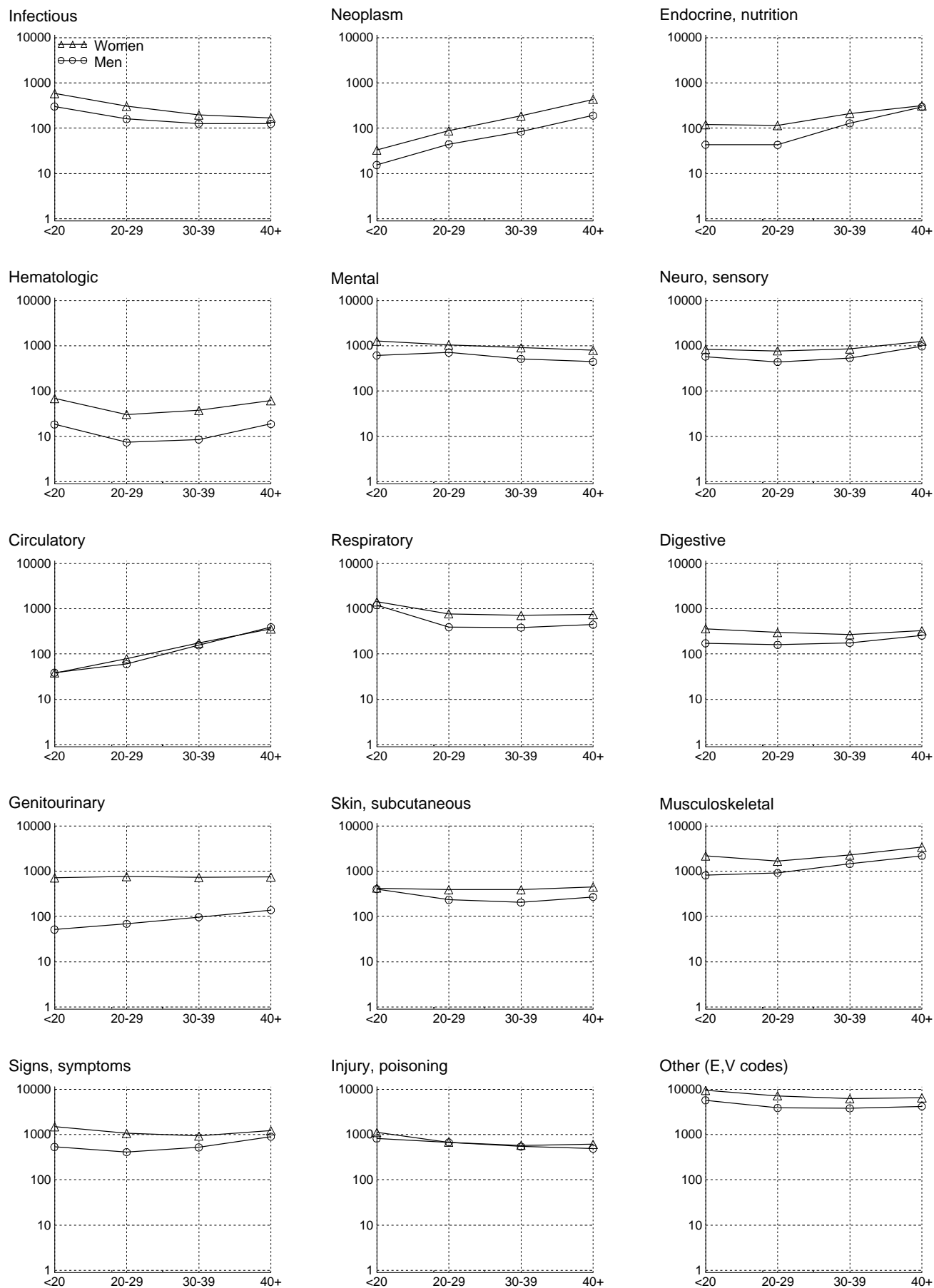
Across diagnostic categories, relationships between age and ambulatory visit rates were generally similar among males and females (**Figure 2**). For example, among both males and females, ambulatory visit rates for neoplasms and circulatory disorders were more than 10-times higher among those older than 40 than younger than 20 years old; in contrast, clinic visit rates for injuries and poisonings, infectious and parasitic diseases, and mental disorders were sharply lower among the oldest compared to younger service members. As in the past, clinic visit rates for genitourinary disorders were fairly stable across all age groups among females but sharply increased with age among males (**Figure 2**).

Dispositions after ambulatory visits

Approximately two-thirds (62.7%) of all illness and injury-related visits resulted in "duty without limitations" dispositions (**Figure 3**). Fewer than one of 25 (3.9%) illness and injury-related visits resulted in "convalescence in quarters" dispositions (**Figure 3**). As in the past, the diagnostic categories with the highest proportions of "convalescence in quarters" or limited duty dispositions were injuries and poisonings (26.9%), diseases of the

Table 1. Ambulatory visits, by major diagnostic category, U.S. Armed Forces, 2003, 2005, and 2007

Major diagnostic category (ICD-9-CM)	2003			2005			2007		
	No.	No. per person	(Rank)	No.	No. per person	(Rank)	No.	No. per person	(Rank)
Other (E80 - E99 and V01-V91)	4,997,007	3.54	(1)	5,898,736	4.28	(1)	6,053,758	4.45	(1)
Musculoskeletal system (710-739)	1,479,964	1.05	(2)	1,480,096	1.07	(2)	1,776,047	1.31	(2)
Mental disorders (290-319)	594,970	0.42	(7)	687,053	0.50	(6)	923,119	0.68	(3)
Injury and poisoning (800-999)	861,393	0.61	(4)	786,242	0.57	(3)	864,850	0.64	(4)
Signs, symptoms and ill-defined conditions (780-799)	886,986	0.63	(3)	626,297	0.45	(7)	792,785	0.58	(5)
Nervous system and sense organs (320-389)	705,156	0.50	(6)	711,190	0.52	(5)	786,647	0.58	(6)
Respiratory system (460-519)	727,213	0.52	(5)	711,557	0.52	(4)	683,457	0.50	(7)
Skin and subcutaneous (680-709)	317,597	0.22	(8)	341,225	0.25	(8)	358,815	0.26	(8)
Digestive system (520-579)	231,163	0.16	(11)	230,766	0.17	(10)	262,247	0.19	(9)
Genitourinary system (580-629)	245,105	0.17	(10)	216,899	0.16	(11)	242,140	0.18	(10)
Infectious and parasitic diseases (001-139)	314,849	0.22	(9)	267,459	0.19	(9)	238,936	0.18	(11)
Circulatory system (390-459)	132,940	0.09	(12)	144,400	0.10	(12)	163,526	0.12	(12)
Endocrine, nutrition, metabolic, immunity (240-279)	125,660	0.09	(13)	127,324	0.09	(13)	138,689	0.10	(13)
Pregnancy complications (630-679)	89,075	0.06	(14)	86,070	0.06	(14)	124,997	0.09	(14)
Neoplasms (140-239)	87,706	0.06	(15)	82,974	0.06	(15)	107,033	0.08	(15)
Congenital anomalies (740-759)	21,436	0.02	(16)	22,539	0.02	(16)	26,024	0.02	(16)
Hematologic disorders (280-289)	16,167	0.01	(17)	15,050	0.01	(17)	18,652	0.01	(17)
Totals	11,834,387	8.38		12,435,877	8.81		13,561,722	9.97	

Figure 2: Rate of ambulatory visits,* by major diagnostic category, by age and gender, U.S. Armed Forces, 2007

*Rates expressed as ambulatory visits per 1,000 person-years.

Table 2. Most frequent diagnoses during ambulatory visits by major diagnostic category, **males**, U.S. Armed Forces, 2007

Diagnostic category (ICD-9-CM codes)	No.	%	Diagnostic category (ICD-9-CM codes)	No.	%
Infectious and parasitic diseases (001-139)	182,477		Digestive system (520-579)	203,870	
Viral & chlamydial infection	38,119	20.9	Other noninfective gastroenteritis and colitis	55,839	27.4
Other diseases due to viruses and chlamydiae	35,844	19.6	Diseases of esophagus	32,672	16.0
Dermatophytosis	29,766	16.3	Inguinal hernia	13,374	6.6
Intestinal infections due to other organisms	14,456	7.9	Gastritis and duodenitis	11,352	5.6
Streptococcal sore throat and scarlatina	10,851	5.9	Gastrointestinal hemorrhage	11,205	5.5
Neoplasms (140-239)	79,958		Genitourinary system (580-629)	96,164	
Benign neoplasm of skin	13,199	16.5	Calculus of kidney and ureter	17,352	18.0
Neoplasm of uncertain behavior, other/unspec site	9,961	12.5	Other disorders of urethra and urinary tract	12,028	12.5
Lipoma	8,615	10.8	Other disorders of male genital organs	11,887	12.4
Neoplasm of unspecified nature	7,135	8.9	Orchitis and epididymitis	11,061	11.5
Cancer of testis	3,529	4.4	Infertility, male	6,513	6.8
Endocrine, nutrition, immunity (240-279)	108,264		Skin and subcutaneous tissue (680-709)	280,804	
Disorders of lipid metabolism	45,532	42.1	Other cellulitis and abscess	54,421	19.4
Diabetes mellitus	17,247	15.9	Contact dermatitis and other eczema	41,033	14.6
Obesity and other hyperalimentation	14,472	13.4	Diseases of hair and hair follicles	37,153	13.2
Disorders of fluid, electrolyte, acid-base balance	6,837	6.3	Diseases of sebaceous glands	33,862	12.1
Gout	5,564	5.1	Diseases of nail	16,303	5.8
Hematologic disorders (280-289)	11,224		Musculoskeletal system (710-739)	1,386,406	
Other and unspecified anemias	2,573	22.9	Other and unspecified disorders of joint	378,873	27.3
Hereditary hemolytic anemias	1,973	17.6	Other and unspecified disorders of back	281,572	20.3
Diseases of white blood cells	1,673	14.9	Peripheral enthesopathies and allied syndromes	97,267	7.0
Purpura and other hemorrhagic conditions	1,613	14.4	Intervertebral disc disorders	93,175	6.7
Other diseases of blood, blood-forming organs	1,349	12.0	Other disorders of soft tissues	83,376	6.0
Mental disorders (290-319)	725,351		Congenital anomalies (740-759)	19,529	
Adjustment reaction	205,785	28.4	Certain congenital musculoskeletal deformities	6,008	30.8
Alcohol dependence syndrome	112,571	15.5	Congenital anomalies of the integument	3,184	16.3
Nondependent abuse of drugs	109,244	15.1	Other congenital musculoskeletal anomalies	2,673	13.7
Neurotic disorders	77,200	10.6	Other congenital anomalies of limbs	1,916	9.8
Affective psychoses	63,291	8.7	Congenital anomalies of urinary system	822	4.2
Nervous system and sense organs (320-389)	622,241		Signs, symptoms, ill-defined conditions (780-799)	582,527	
Disorders of refraction and accommodation	266,381	42.8	General symptoms	138,992	23.9
Organic sleep disorders	48,031	7.7	Symptoms involving respiratory system, chest	115,273	19.8
Hearing loss	39,989	6.4	Other symptoms involving abdomen and pelvis	65,841	11.3
Disorders of conjunctiva	36,217	5.8	Symptoms involving digestive system	50,437	8.7
Migraine	21,671	3.5	Symptoms involving head and neck	49,284	8.5
Circulatory system (390-459)	139,532		Injury and poisoning (800-999)	731,608	
Essential hypertension	67,594	48.4	Sprains and strains of ankle and foot	77,229	10.6
Hemorrhoids	14,387	10.3	Sprains and strains of knee and leg	71,288	9.7
Cardiac dysrhythmias	12,138	8.7	Sprains and strains, other/unspec parts of back	55,850	7.6
Varicose veins of other sites	5,099	3.7	Sprains and strains of shoulder and upper arm	38,057	5.2
Other forms of chronic ischemic heart disease	4,083	2.9	Injury, other and unspecified	36,718	5.0
Respiratory system (460-519)	525,429		Other (E80-E99 and V01-V91)	4,675,276	
Acute upper respiratory infection, unspecified site	144,045	27.4	General medical examination	937,633	20.1
Allergic rhinitis	65,153	12.4	Care involving use of rehabilitation procedures	855,749	18.3
Acute pharyngitis	60,733	11.6	Special investigations and examinations	466,682	10.0
Acute nasopharyngitis (common cold)	38,913	7.4	Encounters for administrative purposes	426,068	9.1
Acute bronchitis and bronchiolitis	29,746	5.7	Other well persons w/o complaint, sickness	378,319	8.1

Table 3. Most frequent diagnoses during ambulatory visits by major diagnostic category, **females**, U.S. Armed Forces, 2007

Diagnostic category (ICD-9-CM codes)	No.	%	Diagnostic category (ICD-9-CM codes)	No.	%
Infectious and parasitic diseases (001-139)	56,459		Digestive system (520-579)	58,377	
Viral & chlamydial infection	14,560	25.8	Other noninfective gastroenteritis and colitis	19,778	33.9
Other diseases due to viruses and chlamydiae	7,422	13.1	Functional digestive disorders, nec	7,732	13.2
Candidiasis	7,136	12.6	Diseases of esophagus	6,299	10.8
Dermatophytosis	4,870	8.6	Gastritis and duodenitis	4,297	7.4
Intestinal infections due to other organisms	4,168	7.4	Gastrointestinal hemorrhage	1,960	3.4
Neoplasms (140-239)	27,075		Genitourinary system (580-629)	145,976	
Benign neoplasm of skin	4,569	16.9	Pain & other symptoms with female genitalia	21,199	14.5
Uterine leiomyoma	4,162	15.4	Menstrual disorder, other abnormal bleeding	18,303	12.5
Cancer of female breast	2,767	10.2	Other disorders of urethra and urinary tract	17,950	12.3
Neoplasm of uncertain behavior, oth & unspec sit	2,587	9.6	Inflammatory disease of cervix, vagina, vulva	17,442	11.9
Neoplasm of unspecified nature	1,879	6.9	Noninflammatory disorders of cervix	14,584	10.0
Endocrine, nutrition, immunity (240-279)	30,425		Pregnancy complications (630-679)	124,843	
Obesity and other hyperalimentation	6,921	22.7	Other complications of pregnancy, nec	17,025	13.6
Acquired hypothyroidism	5,100	16.8	Other current conditions complicating pregnancy	16,619	13.3
Disorders of lipid metabolism	3,264	10.7	Early or threatened labor	9,986	8.0
Disorders of fluid, electrolyte and acid-base ba	2,496	8.2	Hemorrhage in early pregnancy	8,513	6.8
Thyrototoxicosis with or without goiter	2,241	7.4	Other indications for care, labor and delivery	7,269	5.8
Hematologic disorders (280-289)	7,428		Skin and subcutaneous tissue (680-709)	78,011	
Other and unspecified anemias	2,993	40.3	Diseases of sebaceous glands	15,940	20.4
Iron deficiency anemias	2,027	27.3	Contact dermatitis and other eczema	12,424	15.9
Other diseases of blood and blood-forming organs	539	7.3	Other cellulitis and abscess	9,391	12.0
Hereditary hemolytic anemias	527	7.1	Diseases of hair and hair follicles	6,360	8.2
Purpura and other hemorrhagic conditions	485	6.5	Other disorders of skin and subcutaneous tissue	4,905	6.3
Mental disorders (290-319)	197,768		Musculoskeletal system (710-739)	389,641	
Adjustment reaction	57,744	29.2	Other and unspecified disorders of joint	102,827	26.4
Affective psychoses	32,706	16.5	Other and unspecified disorders of back	76,690	19.7
Neurotic disorders	28,543	14.4	Nonallopathic lesions, nec	30,323	7.8
Depressive disorder, nec	23,874	12.1	Other disorders of soft tissues	29,635	7.6
Alcohol dependence syndrome	14,591	7.4	Peripheral enthesopathies and allied syndromes	22,189	5.7
Nervous system and sense organs (320-389)	164,406		Signs, symptoms, ill-defined conditions (780-799)	210,258	
Disorders of refraction and accommodation	69,127	42.0	Other symptoms involving abdomen and pelvis	37,062	17.6
Migraine	20,476	12.5	General symptoms	29,846	14.2
Disorders of conjunctiva	10,174	6.2	Symptoms involving respiratory system, chest	29,380	14.0
Mononeuritis of upper limb, mononeuritis multiplex	5,609	3.4	Nonspecific histological/ immunological findings	26,998	12.8
Suppurative and unspecified otitis media	4,379	2.7	Symptoms involving digestive system	22,772	10.8
Circulatory system (390-459)	23,994		Injury and poisoning (800-999)	133,242	
Essential hypertension	8,862	36.9	Sprains and strains of ankle and foot	17,403	13.1
Hemorrhoids	2,997	12.5	Sprains and strains of knee and leg	16,494	12.4
Cardiac dysrhythmias	2,518	10.5	Sprains and strains, other/unspec parts of back	14,278	10.7
Varicose veins of lower extremities	1,689	7.0	Certain adverse effects, nec	5,231	3.9
Diseases of capillaries	1,310	5.5	Injury, other and unspecified	5,194	3.9
Respiratory system (460-519)	158,028		Other (E80-E99 and V01-V91)	1,378,482	
Acute upper respiratory infection, unspecified site	42,376	26.8	Care involving use of rehabilitation procedures	206,032	14.9
Allergic rhinitis	23,979	15.2	Special investigations and examinations	190,537	13.8
Acute pharyngitis	19,361	12.3	General medical examination	171,334	12.4
Acute nasopharyngitis (common cold)	11,731	7.4	Normal pregnancy	134,277	9.7
Asthma	11,109	7.0	Other well persons w/o complaint, sickness	115,287	8.4

respiratory system (23.7%), musculoskeletal and connective tissue disorders (22.9%), and diseases of the digestive system (22.5%) (**Figure 3**). Musculoskeletal and connective tissue disorders and injuries and poisonings accounted for more than two-thirds (68.0%) of all “limited duty” dispositions (**Figure 3**). Diseases of the respiratory system accounted for nearly one-third (31.2%) of all “convalescence in quarters” dispositions – more than twice as many (n= 90,705) as any other disease category (**Figure 3**).

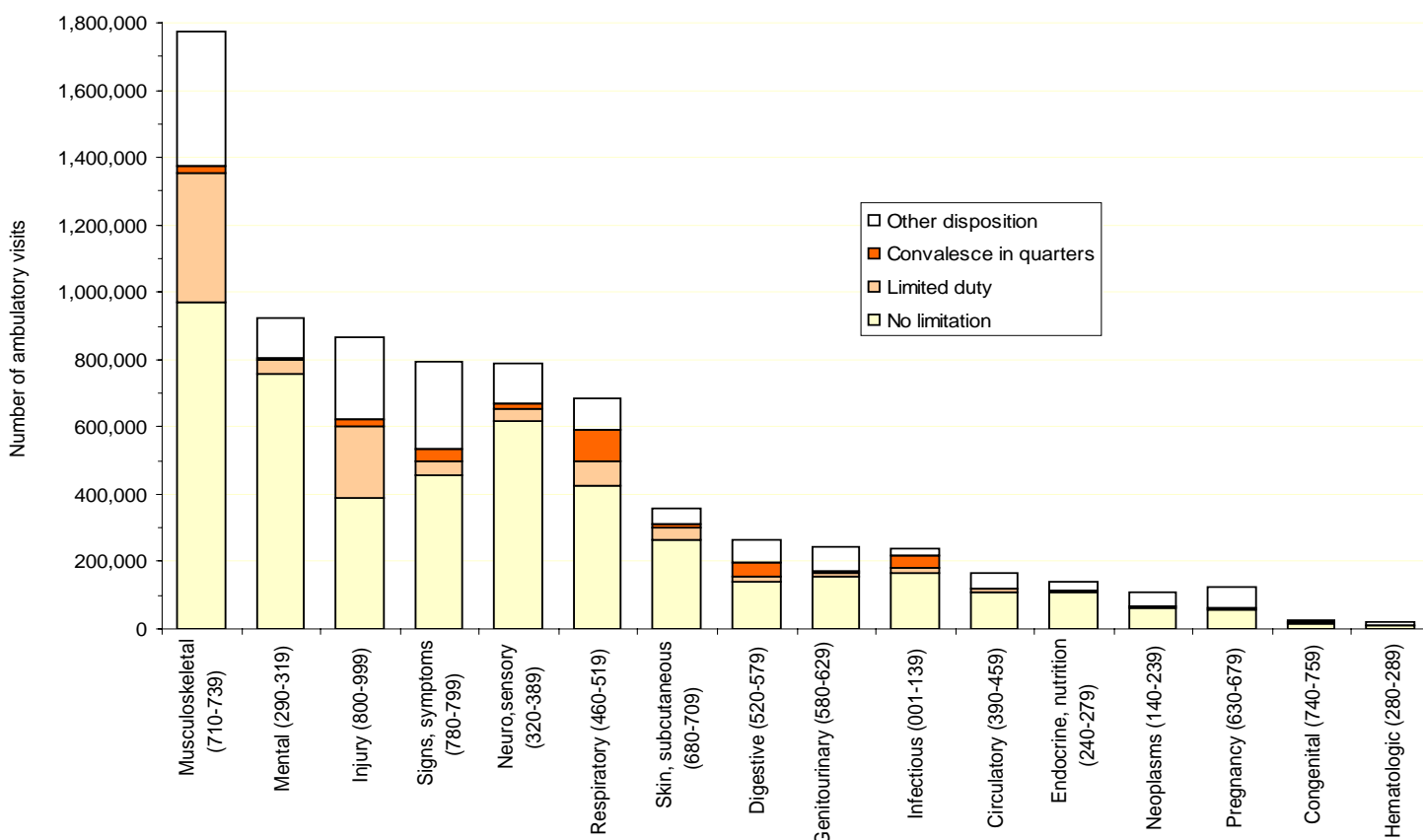
Editorial comment:

In the past five years, the distribution of illness and injury-related ambulatory visits in relation to their reported causes has remained fairly stable. Of note, however, from 2003 to 2007,

documented visits for mental disorders increased by more than 55%. Thus, in 2007, musculoskeletal and connective tissue disorders, injuries and poisonings, and mental disorders accounted for nearly one-half of all illness and injury-related ambulatory visits and more than one-half of all “limited duty” dispositions among active component service members. Prevention and clinical care resources should be focused in these general areas; in particular, the prevention and treatment of back injuries should be a high priority.

The findings of this report should be interpreted in light of the fact that ambulatory care that is delivered by unit medics and by deployed (including in Afghanistan, Iraq, and at sea) medical treatment facilities are not archived in the Defense Medical Surveillance System and are not included in this report.

Figure 3. Ambulatory visits in relation to reported dispositions, by diagnostic category, active components, U.S. Armed Forces, 2007



Absolute and relative morbidity burdens attributable to various illnesses and injuries, U.S. Armed Forces, 2007

Perceptions of the relative “importance” of various conditions in military populations often determine the natures, extents, and priorities for resources for primary, secondary, and tertiary prevention activities. However, perceptions of the importance of conditions are inherently subjective; hence, they may have weak relationships with objective measures of their impacts on health, fitness, military operational effectiveness, health care costs, and so on.

Several classification systems and morbidity measures have been developed to quantify the “public health burdens” that are attributable to various illnesses and injuries in defined populations and settings.¹ Not surprisingly, different classification systems and morbidity measures lead to different rankings of illness and injury-specific public health burdens.² For example, in a given population and setting, the illnesses and injuries that account for the most hospitalizations are likely different from those that account for the most outpatient medical encounters; and the illnesses and injuries that account for the most medical encounters overall likely differ from those that affect the most individuals, have the most debilitating or long-lasting effects, and so on.²

Thus, in a given population and setting, the classification system or measure that is used to quantify condition-specific morbidity burdens determines to a large extent the conclusions that may be drawn regarding the relative “importance” of various conditions - and, in turn, the resources that may be indicated to prevent or minimize their impacts.

This annual summary uses several measures to estimate the health care burdens that were attributable to various illnesses and injuries among members of the U.S. Armed Forces in 2007.

Methods:

For this summary, we defined illnesses and injuries by grouping related ICD-9-CM coded diagnoses (at the 3-digit level) based on a modified version of the classification system developed for the Global Burden of Disease (GBD) Study.¹ In general, the GBD system groups diagnoses with common pathophysiologic or etiologic bases and/or significant international health policymaking importance. For our purposes, we broke out some diagnoses (e.g., mental disorders) that are grouped in the GBD system to increase the relevance of the results to the U.S. military and the U.S. Military Health System. We also categorized injuries by affected anatomic sites rather than causes (because external causes of injuries are not routinely reported in military outpatient records).

For this analysis, we summarized all inpatient and

outpatient medical encounters of all active component service members based on the primary (first listed) diagnosis if the primary diagnosis had an ICD-9-CM code between 001 and 999. If the primary diagnosis was coded as ICD-9-CM: V70.5 “health examination of defined subpopulation,” the second listed diagnosis (if it had an ICD-9-CM code between 001 and 999) was used for the analysis. (V70.5 indicates that an encounter was “deployment related”).

For this surveillance, the “morbidity burdens” attributable to each “condition” were estimated based on: (a) total medical encounters for each condition; (b) total service members affected by each condition (i.e., at least one medical encounter); and (c) total bed-days during hospitalizations for each condition.

Results:

Morbidity burden, by category of conditions:

In 2007, more than twice as many service members (n=910,141) received medical care for injuries than for any other category of conditions (**Figure 1**). As in the past, injuries and mental disorders accounted for more medical encounters and hospital bed-days by far than any other category of conditions (**Figure 1**).

Of note, in 2007, injuries accounted for more than one-fourth of all medical encounters (28.2%), and mental disorders accounted for nearly the same proportion of all hospital bed-days (27.9%) (**Figure 1**). Together, injuries and mental disorders accounted for more than 40% of all medical encounters and more than one-half (53.3%) of all hospital bed days (**Figure 1**).

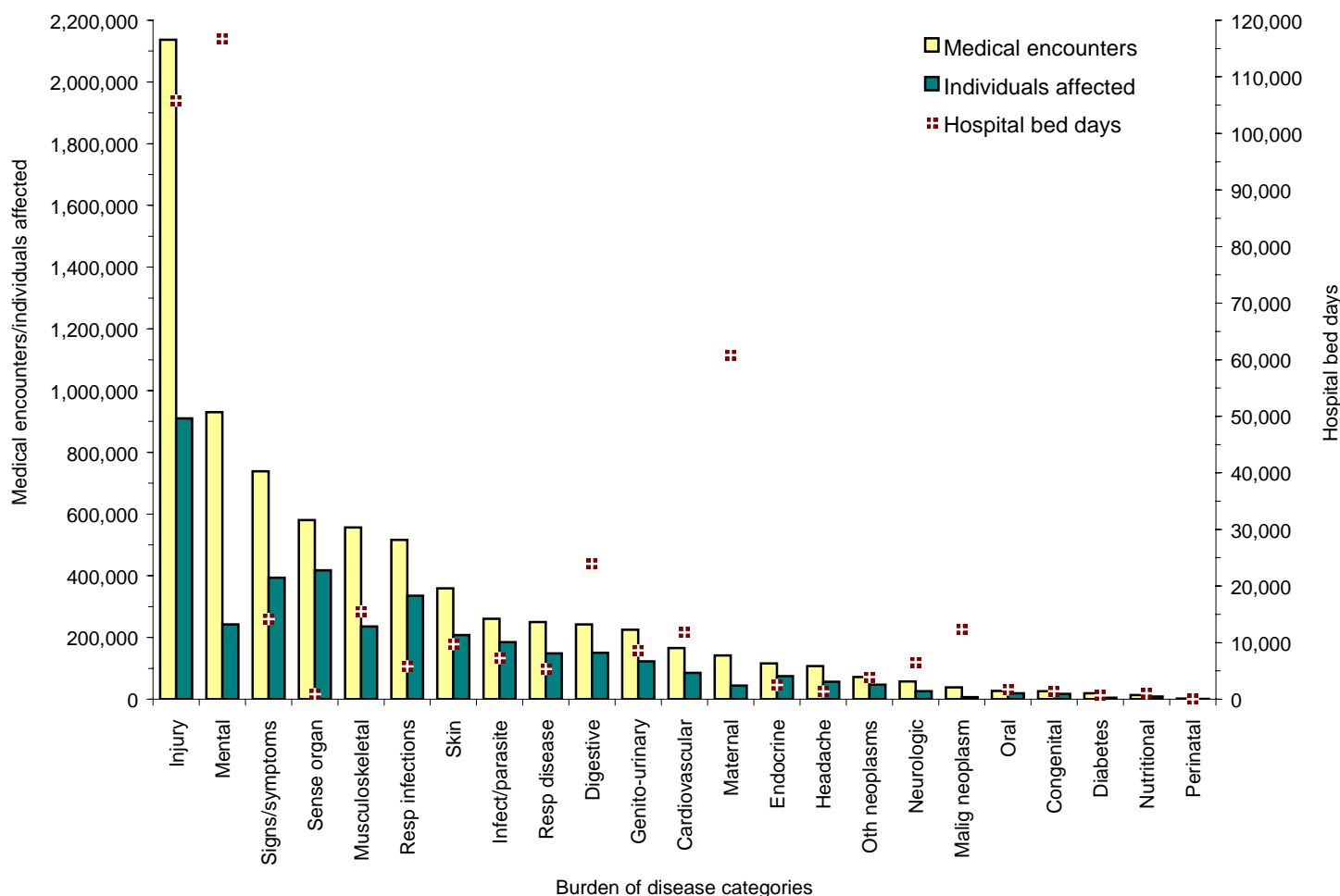
“Maternal” conditions (including pregnancy and delivery) accounted for fewer than 2.0% of all medical encounters but nearly 15% of all hospital bed-days (**Figure 1**).

Medical encounters, by condition:

In 2007, four conditions accounted for nearly one-fourth (23.1%) – and 11 conditions accounted for nearly one-half (49.4%) – of all illness and injury-related medical encounters (**Figure 2**). Leading causes of medical encounters were injuries – of the back and abdomen, knee, foot and ankle, and arm and shoulder; upper respiratory infections; disorders of refraction and accommodation; and substance abuse disorders (**Table 1, Figure 2**).

Individuals affected, by condition:

In 2007, more service members received medical care for upper respiratory infections than any other condition (**Table 1**). Of the 16 conditions that affected the most service

Figure 1. Medical encounters, individuals affected, and hospital bed days, by burden of disease categories, U.S. Armed Forces, 2007

members, seven were injuries – of the back and abdomen, foot and ankle, knee, arm and shoulder, head and neck, hand and wrist, and “unspecified” (Table 1).

Hospital bed-days, by condition:

In 2007, mood disorders (10.7%), deliveries of newborn infants (9.6%), and injuries of the head and neck (5.9%) accounted for more than one-fourth of all hospital days (Table 1, Figure 3). Eight conditions – two related to pregnancy (delivery, pregnancy complications); three related to injuries (to the head and neck, leg, back and abdomen); and three related to mental disorders (mood, substance abuse, adjustment) – accounted for nearly one-half (48.1%) of all hospital bed-days (Table 1, Figure 3).

Relationships between health care burden indicators:

There was a strong correlation between the number of medical encounters attributable to various conditions and the number of individuals affected by the conditions ($r=0.94$). For example, the nine conditions that affected the most individuals were all among the 11 leading sources of medical encounters (Table 1). In contrast, there were not strong relationships between hospital bed-days attributable

to conditions and either individuals affected by ($r=0.30$) or medical encounters attributable to ($r=0.46$) the same conditions. For example, deliveries of newborns, substance abuse disorders, and pregnancy complications affected relatively few individuals but were among the top five sources of hospital bed-days; on the other hand, upper respiratory infections affected more individuals than any other condition, were a leading source of medical encounters, but accounted for relatively few hospital bed-days (Table 1).

“Injuries - to the back/abdomen” was the only condition among the top 10 of all conditions by all burden measures (Table 1). Substance abuse was the only other condition among the top 10 of all conditions by two burden measures, i.e., medical encounters and hospital bed-days (Table 1).

Editorial comment:

Illnesses and injuries are “burdens” to the U.S. Armed Forces to the extent that they degrade the health, fitness, morale, sense of well-being, and military operational effectiveness of service members; in addition, they consume scarce health care resources for diagnosis, treatment, rehabilitation, and disability compensation. To a significant

Figure 2. Percent and cumulative % distributions, burden categories that accounted for the most medical encounters, U.S. service members, 2007

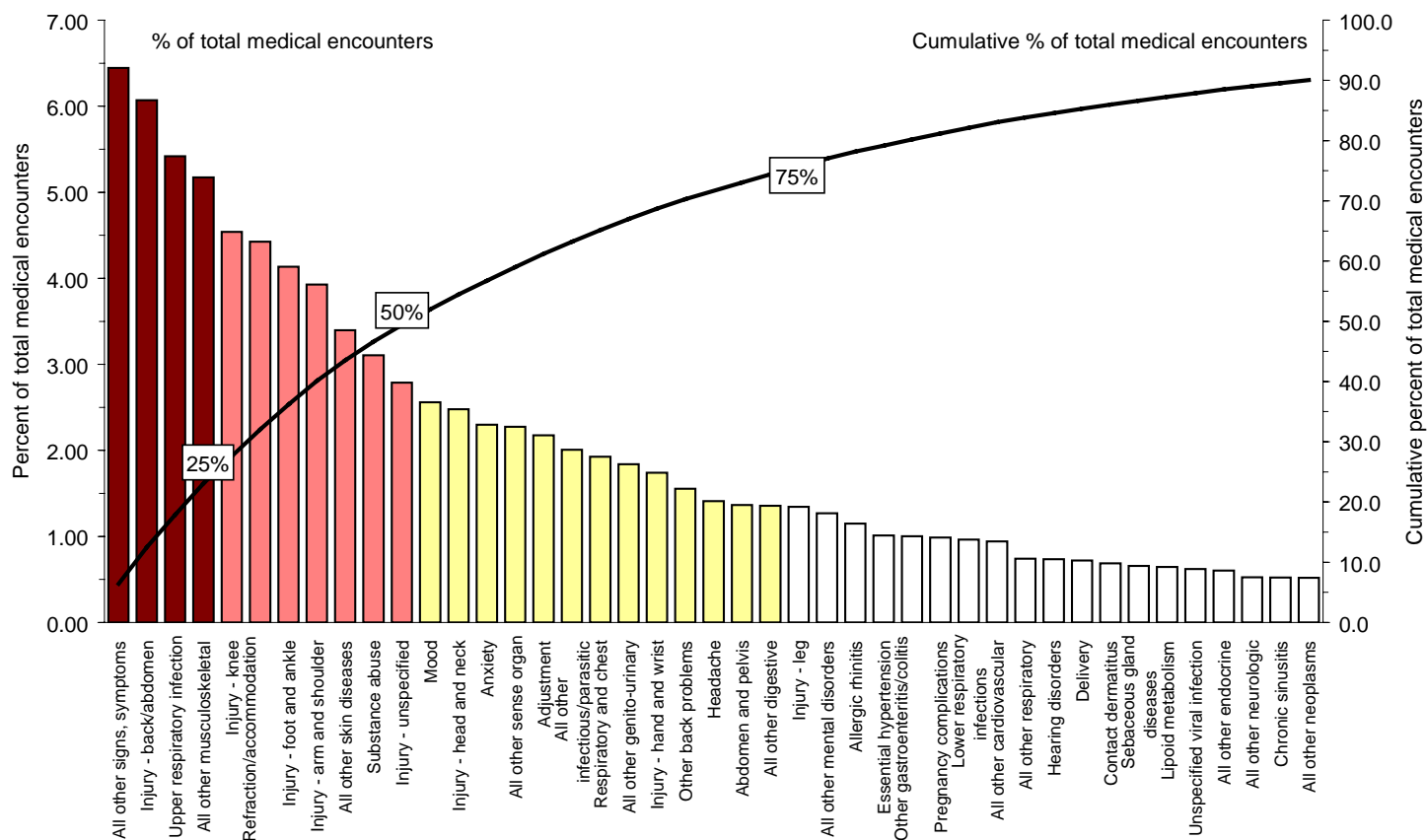


Figure 3. Percent and cumulative % distributions, burden categories that accounted for the most hospital bed-days, U.S. service members, 2007

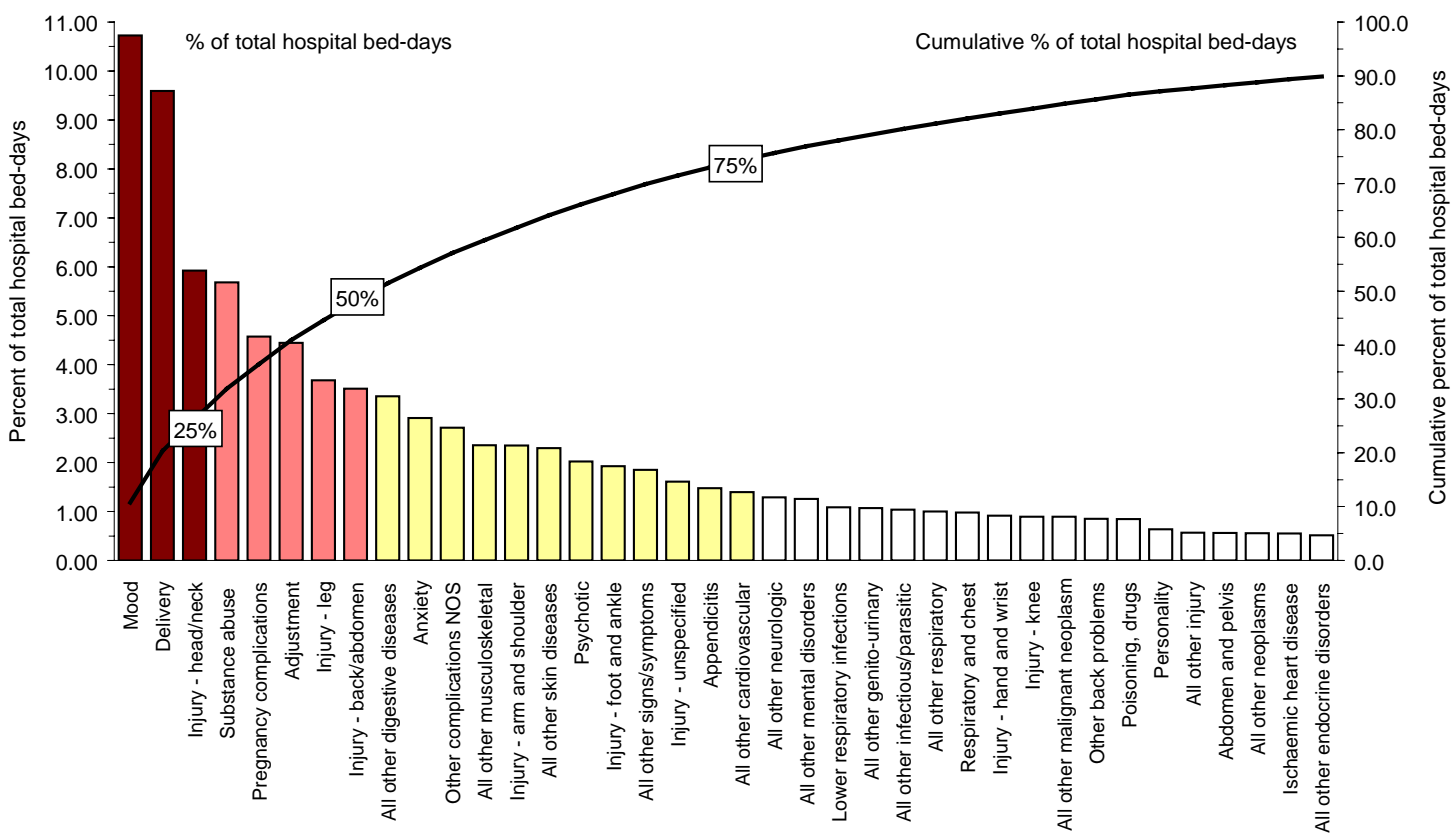


Table 1. Health care burdens attributable to various diseases and injuries, U.S. Armed Forces, 2007

Category*	Medical encounters†		Individuals affected‡		Hospital bed days		Category*	Medical encounters†		Individuals affected‡		Hospital bed days	
	No.	Rank	No.	Rank	No.	Rank		No.	Rank	No.	Rank	No.	Rank
Injury and poisoning							Skin diseases						
Back and abdomen	460,114	(2)	163,523	(5)	14,653	(8)	All other skin diseases	257,457	(9)	137,806	(7)	9,579	(14)
Knee	344,052	(5)	121,047	(9)	3,732	(29)	Contact dermatitis	52,078	(36)	39,634	(29)	75	(102)
Foot and ankle	313,430	(7)	138,993	(6)	8,045	(16)	Sebaceous gland diseases	49,814	(37)	30,065	(37)	67	(105)
Arm and shoulder	297,724	(8)	103,860	(11)	9,823	(13)	Infectious and parasitic diseases						
Unspecified injury	211,299	(11)	128,881	(8)	6,738	(18)	All other infectious and parasitic	152,234	(17)	100,262	(12)	4,332	(25)
Head and neck	187,977	(13)	85,538	(13)	24,755	(3)	Unspecified viral infection	47,073	(39)	38,734	(31)	448	(74)
Hand and wrist	131,839	(20)	67,989	(16)	3,820	(28)	STDs	23,504	(53)	17,304	(52)	896	(55)
Leg	101,795	(25)	40,834	(27)	15,371	(7)	Diarrheal diseases	21,292	(56)	17,980	(49)	881	(57)
Environmental	29,125	(48)	22,659	(44)	907	(54)	Chlamydia	7,089	(77)	6,076	(68)	52	(109)
Other complications NOS	25,215	(50)	13,791	(56)	11,325	(11)	Tuberculosis	5,071	(84)	2,932	(77)	131	(98)
All other injury	13,205	(65)	8,630	(62)	2,361	(34)	Hepatitis B and C	2,926	(95)	1,060	(93)	44	(110)
Other injury from external causes	11,350	(70)	8,468	(63)	267	(83)	Bacterial meningitis	907	(109)	382	(106)	276	(82)
Poisoning, drugs	5,810	(79)	3,191	(76)	3,527	(32)	Malaria	405	(115)	136	(115)	189	(90)
Poisoning, non-drug	3,690	(87)	2,737	(79)	464	(73)	Tropical cluster	232	(119)	66	(119)	16	(117)
Mental disorders							Intestinal nematode infection	215	(121)	178	(113)	5	(125)
Substance abuse disorders	235,499	(10)	30,171	(36)	23,737	(4)	Respiratory diseases						
Mood	194,107	(12)	45,166	(23)	44,812	(1)	Allergic rhinitis	87,172	(27)	47,890	(22)	28	(112)
Anxiety	174,280	(14)	39,024	(30)	12,160	(10)	All other respiratory diseases	56,262	(33)	29,360	(38)	4,181	(26)
Adjustment	164,866	(16)	51,616	(21)	18,570	(6)	Chronic sinusitis	39,506	(42)	30,409	(35)	173	(95)
All other mental disorders	96,202	(26)	42,974	(25)	5,260	(22)	Asthma	38,945	(44)	17,796	(50)	590	(68)
Tobacco dependence	36,149	(46)	25,314	(39)	583	(70)	Chronic obstructive pulmonary	27,943	(49)	22,989	(43)	339	(78)
Personality	13,065	(66)	4,961	(72)	2,671	(33)	Digestive diseases						
Psychotic	11,862	(68)	1,664	(86)	8,449	(15)	All other digestive diseases	102,829	(24)	51,704	(20)	14,025	(9)
Somatoform	3,614	(88)	1,392	(89)	481	(72)	Other gastroenteritis and colitis	76,009	(29)	62,088	(17)	1,296	(45)
Signs and symptoms							Esophagus disease	38,779	(45)	25,139	(42)	1,177	(51)
All other signs and symptoms	488,481	(1)	255,850	(3)	7,737	(17)	Inguinal hernia	13,924	(64)	5,989	(69)	624	(66)
Respiratory and chest	146,140	(18)	80,311	(14)	4,099	(27)	Appendicitis	7,424	(76)	2,890	(78)	6,175	(19)
Abdomen and pelvis	103,484	(23)	57,812	(18)	2,336	(35)	Peptic ulcer disease	1,767	(103)	1,092	(92)	516	(71)
Musculoskeletal diseases							Cirrhosis of the liver	1,605	(105)	1,053	(94)	94	(99)
All other musculoskeletal	392,178	(4)	166,359	(4)	9,834	(12)	Genito-urinary diseases						
Other back problems	117,897	(21)	44,096	(24)	3,547	(31)	All other genito-urinary	139,318	(19)	78,221	(15)	4,467	(24)
Other knee disorders	18,990	(59)	9,476	(59)	1,248	(47)	Female genital pain	21,418	(55)	12,710	(57)	586	(69)
Osteoarthritis	12,971	(67)	7,792	(64)	624	(66)	Kidney stones	20,608	(57)	7,366	(65)	1,179	(50)
Other shoulder disorders	11,461	(69)	6,940	(66)	208	(87)	Menstrual disorders	18,560	(60)	12,224	(58)	659	(65)
Rheumatoid arthritis	3,277	(90)	1,098	(91)	67	(105)	Other breast disorders	16,203	(62)	8,817	(61)	423	(75)
Respiratory infections							Nephritis and nephrosis	5,630	(81)	1,492	(87)	1,211	(49)
Upper respiratory infections	410,836	(3)	267,806	(1)	1,236	(48)	Benign prostatic hypertrophy	3,275	(91)	2,137	(80)	75	(102)
Lower respiratory infections	73,048	(31)	42,559	(26)	4,545	(23)	Cardiovascular diseases						
Otitis media	32,542	(47)	25,225	(40)	25	(113)	Essential hypertension	76,682	(28)	40,366	(28)	929	(53)
Sense organ diseases							All other cardiovascular	71,406	(32)	38,530	(32)	5,834	(20)
Refraction/accommodation	335,544	(6)	262,635	(2)			Ischemic heart disease	9,155	(75)	3,421	(75)	2,292	(37)
All other sense organ diseases	172,438	(15)	108,950	(10)	837	(58)	Cerebrovascular disease	5,637	(80)	1,790	(84)	1,916	(39)
Hearing disorders	55802	(34)	35439	(34)	32	(111)	Inflammatory	2,292	(100)	885	(97)	765	(61)
Glaucoma	15,544	(63)	9,268	(60)	7	(122)	Rheumatic heart disease	842	(110)	617	(100)	54	(108)
Cataracts	1,439	(108)	856	(98)	6	(124)							

*Categories defined in the Global Burden of Disease Study

†Medical encounters: total hospitalizations and ambulatory visits for the condition

‡Individuals affected: individuals with at least one hospitalizations or ambulatory visit for the condition

Table 1 Continued. Health care burdens attributable to various diseases and injuries, U.S. Armed Forces, 2007

Category*	Medical encounters†		Individuals affected‡		Hospital bed days		Category*	Medical encounters†		Individuals affected‡		Hospital bed days	
	No.	Rank	No.	Rank	No.	Rank		No.	Rank	No.	Rank	No.	Rank
Maternal conditions							Breast cancer	2814	(96)	337	(107)	140	(97)
Pregnancy complications	74,894	(30)	21,216	(46)	19,102	(5)	Brain	2105	(101)	198	(110)	1826	(41)
Delivery	54,693	(35)	17,607	(51)	40,090	(2)	Thyroid	1949	(102)	418	(105)	395	(76)
Ectopic/miscarriage/abortion	9,418	(74)	3,981	(74)	795	(60)	Prostate cancer	1534	(106)	326	(108)	309	(80)
Puerperium complications	2,318	(98)	1,403	(88)	825	(59)	Mouth and oropharynx cancers	1447	(107)	146	(114)	257	(85)
All other maternal disorders	39	(129)	21	(125)	3	(126)	Stomach cancer	454	(113)	42	(123)	239	(86)
Endocrine disorders							Trachea,bronchus, lung cancers	423	(114)	74	(118)	333	(79)
Lipoid metabolism disorders	48,827	(38)	36,527	(33)	170	(96)	Bladder cancer	342	(117)	80	(117)	92	(100)
All other endocrine disorders	45827	(40)	21656	(45)	2150	(38)	Ovary cancer	245	(118)	59	(121)	17	(116)
Obesity	21,450	(54)	16,829	(53)	182	(92)	Cervix uteri cancer	224	(120)	48	(122)	176	(94)
Headache							Esophagus cancer	180	(122)	17	(127)	19	(114)
Headache	106,816	(22)	56,885	(19)	1339	(44)	Liver cancer	78	(126)	16	(129)	206	(88)
Other neoplasms							Pancreas cancer	73	(127)	18	(126)	18	(115)
All other neoplasms	39,300	(43)	25,207	(41)	2,331	(36)	Corpus uteri cancer	42	(128)	17	(127)	15	(119)
Benign skin neoplasm	17,773	(61)	13,818	(55)	15	(119)	Oral conditions						
Lipoma	9,739	(73)	5,913	(70)	65	(107)	All other oral conditions	25,171	(51)	18,541	(47)	1,718	(42)
Uterine leiomyoma	4,615	(86)	2,004	(82)	1,508	(43)	Dental caries	626	(111)	539	(103)	16	(117)
Neurologic conditions							Periodontal disease	604	(112)	536	(104)	2	(127)
All other neurologic conditions	39,695	(41)	18,148	(48)	5,382	(21)	Congenital anomalies						
Other mononeuritis - limbs	9,773	(72)	4,841	(73)	184	(91)	All other congenital anomalies	24,034	(52)	15,857	(54)	1,103	(52)
Epilepsy	5,452	(82)	1,912	(83)	709	(62)	Congenital heart disease	2,296	(99)	1,142	(90)	307	(81)
Multiple sclerosis	2,496	(97)	585	(102)	203	(89)	Diabetes mellitus						
Parkinson disease	113	(125)	42	(123)	67	(105)	Diabetes mellitus	19,300	(58)	5,120	(71)	673	(64)
Alzheimer and other dementias	10	(130)	5	(130)			Nutritional deficiencies						
Malignant neoplasms							All other nutritional deficiencies	10,575	(71)	6,881	(67)	706	(63)
Lymphomas and multiple myeloma	6,236	(78)	664	(99)	1,251	(46)	Iron-deficiency anemia	2,992	(94)	1,686	(85)	265	(84)
All other malignant neoplasms	5,235	(83)	985	(96)	3,728	(30)	Protein-energy malnutrition	131	(123)	62	(120)	82	(101)
Melanoma and other skin cancers	4,655	(85)	2,064	(81)	182	(92)	Conditions arising during the perinatal period						
Testicular cancer	3,606	(89)	617	(100)	340	(77)	All other perinatal anomalies	1,617	(104)	1,041	(95)	7	(122)
Colon and rectum cancers	3,177	(92)	242	(109)	888	(56)	Low birth weight	376	(116)	198	(110)	1	(128)
Leukemia	3,020	(93)	181	(112)	1,873	(40)	Birth asphyxia and birth trauma	123	(124)	86	(116)	8	(121)

*Categories defined in the Global Burden of Disease Study

†Medical encounters: total hospitalizations and ambulatory visits for the condition

‡Individuals affected: individuals with at least one hospitalizations or ambulatory visit for the condition

degree, prevention priorities, practices, research activities, and associated resources should target illnesses and injuries that account for the largest morbidity burdens.

As in the past, and as expected, the relative ranks of various illness and injury-related conditions significantly varied across the measures of morbidity burden (e.g., medical encounters, individuals affected, hospital bed-days). Still, however, remarkably few conditions — particularly back injuries, pregnancy-related conditions, and mental (including substance abuse) disorders — accounted for a majority of all morbidity burden, regardless of how it was measured. For example, during 2007, 11 (of 130) conditions accounted for approximately one-half of all medical encounters, and eight

conditions accounted for nearly one-half of all hospital bed-days.

Throughout military history, injuries, mental disorders (particularly related to combat), and substance abuse disorders have been leading causes of morbidity and lost duty time among service members.³⁻⁶ In 2007, 13 conditions were among the top 25 in all three burden-related rankings. Of these, five were injuries — to the back and abdomen, foot and ankle, arm and shoulder, “unspecified,” and head and neck; two were mental disorders (mood and adjustment); and the others were non-specific groupings of related diagnoses (“all other” signs and symptoms, musculoskeletal, skin, digestive, infectious and parasitic, and genito-urinary diseases) (**Table 1**).

As notes many times in the past, the prevention of injuries of all types – but, particularly, back injuries – and the detection, characterization, and management of mental disorders – including substance abuse and deployment stress-related disorders, e.g., PTSD – should be clear focuses of military public health and force health protection programs.

In summary, this analysis, like those of recent years, documents that a relatively few illnesses and injuries account for most of the total health care burden that affects U.S. service members. Illnesses and injuries that account for disproportionately large health care burdens (regardless of the metric used to measure it) should be targeted to determine their susceptibilities to primary, secondary, and tertiary prevention efforts and given high priorities for prevention resources.

References:

1. The global burden of disease: A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020. Murray, CJ and Lopez, AD, eds. Harvard School of Public Health (on behalf of the World Health Organization and The World Bank), 1996, 120-2.
2. Brundage JF, Johnson KE, Lange JL, Rubertone MV. Comparing the population health impacts of medical conditions using routinely collected health care utilization data: nature and sources of variability. *Mil Med* 2006 Oct;171(10):937-42.
3. Jones BH, Perrotta DM, Canham-Chervak ML, Nee MA, Brundage JF. Injuries in the military: a review and commentary focused on prevention. *Am J Prev Med*. 2000 Apr;18(3 Suppl):71-84.
4. Ritchie EC, Benedek D, Malone R, Carr-Malone R. Psychiatry and the military: an update. *Psychiatr Clin North Am*. 2006 Sep;29(3):695-707.
5. Cozza KL, Hales RE. Psychiatry in the Army: a brief historical perspective and current developments. *Hosp Community Psychiatry*. 1991 Apr;42(4):413-8.
6. Watanabe HK, Harig PT, Rock NL, Koshes RJ. ch. 5, Alcohol and drug abuse and dependence, in Textbook of Military Medicine series. Military psychiatry: preparing in peace for war. Office of the Surgeon General, Department of the Army. Borden Institute. Washington DC. Viewed on 22 April 2008 at: http://www.bordeninstitute.army.mil/published_volumes/military_psychiatry/MPch5.pdf.

Reportable medical events, active components, U.S. Armed Forces, 2007

In the U.S. Armed Forces, medical events of public health and/or military medical importance or high interest are reported through service-specific electronic reporting programs: the Army Reportable Medical Events System (RMES), the Air Force Reportable Event Surveillance System (AFRESS), and the Navy Reportable Disease System (NDRS). Army, Air Force, and Navy preventive medicine/public health activities at military installations worldwide collect and electronically transmit data regarding notifiable events to their respective service surveillance centers. From these centers, reports are forwarded to the Armed Forces Health Surveillance Center (AFHSC). At the AFHSC, the data are integrated with personnel and other medical event data in the Defense Medical Surveillance System (DMSS).¹

Since 1998, 70 medical conditions² have been designated as “reportable” by the Department of Defense. The Army began electronic reporting of notifiable events in 1994 and in 2000, the medical surveillance centers of the Navy and Air Force began forwarding their reportable medical event case reports centrally for integration in the DMSS. The integration of data from all of the services enables summaries and analyses across the entire U.S. Armed Forces. This report summarizes frequencies, rates, and trends (through calendar year 2007) of reportable medical events among active duty military personnel.

Results:

During 2007, there were 14,712 reports of notifiable medical events among active component members of the U.S. Armed Forces. During the year, there were an average of 25.4, 10.6, and 4.3 case reports per day from Army, Air Force, and Navy medical treatment facilities, respectively. In 2007 compared to 2006, there were approximately twice as many reports from Air Force installations, 20% more from Navy installations, and similar numbers from Army installations (Tables 1-4).

Sexually-transmitted infections:

In 2007, as in recent prior years, sexually-transmitted infections (due to chlamydia, gonorrhea, syphilis, and non-gonococcal urethritis) accounted for most (n=13,320; 90.5%) of the notifiable event reports overall; and infections with *Chlamydia trachomatis* were the most frequently reported specific notifiable condition (n=11,260; 76.5% of all reports) (Tables 1-4). There is not a clear trend in the annual number of reports of sexually-transmitted infections among active service members; for example, in 2007, there were more reports than in the two prior years but fewer reports than in 2003 and 2004 (Tables 1-4).

Environmental:

In 2007, military medical facilities reported 525 heat and 60 cold-related injuries among active component members. During the year, there were fewer reports of heat injuries than in any year since 2003 (and approximately 20% fewer than in 2005) (Tables 1-4, Figure 1).

There were more reports of cold injuries in 2007 than in 2005 or 2006. Of note, the slight increase overall reflected increased numbers of reports of “hypothermia” in the Army (n=8) and Air Force (n=3) (Tables 1-4).

Vaccine preventable illnesses

In 2007, there were no reports of anthrax, diphtheria, polio, rabies, rubella, tetanus, or yellow fever among active component members. Of other vaccine preventable diseases, in 2007, there were fewer reports of pertussis (n=6) and hepatitis B (n=29) than in recent prior years; and there were relatively few reported cases of hepatitis A (n=9) and mumps (n=2), continuing recent trends (Tables 1-4).

Arthropod-transmitted diseases:

In general, there were similar numbers of reports of arthropod-transmitted infectious diseases among active service members in 2007 compared to recent prior years. Of note, however, there were sharply more reported cases of Lyme disease in 2007 – overall (n=69) and from each of services (Tables 1-4, Figure 1).

Food/water-transmitted infections:

In 2007, the most frequently reported food/water-transmitted infectious diseases among service members were salmonellosis (n=61), campylobacter (n=42), shigellosis (n=22), and giardiasis (n=21). Over the past five years, the numbers of reported cases of food/water-transmitted infectious diseases – overall and by specific causes – have been fairly stable (Tables 1-4). Of note, there continue to be very few reported cases of *E. coli* O157:H7, typhoid fever, amebiasis, and cholera (Tables 1-4).

Editorial comment:

Surveillance of reportable medical conditions is important because it can provide military public health officials with unique, timely, and actionable information regarding ongoing and emerging threats to public health and/or military operational effectiveness. For example, exposures to significant health threats while deployed may not be clinically expressed until days to months after redeploying – in locations far removed from the sites of the exposures. The integration

Table 1. Reportable events* at U.S. military medical treatment facilities, active component members, U.S. Armed Forces, 2003-2007

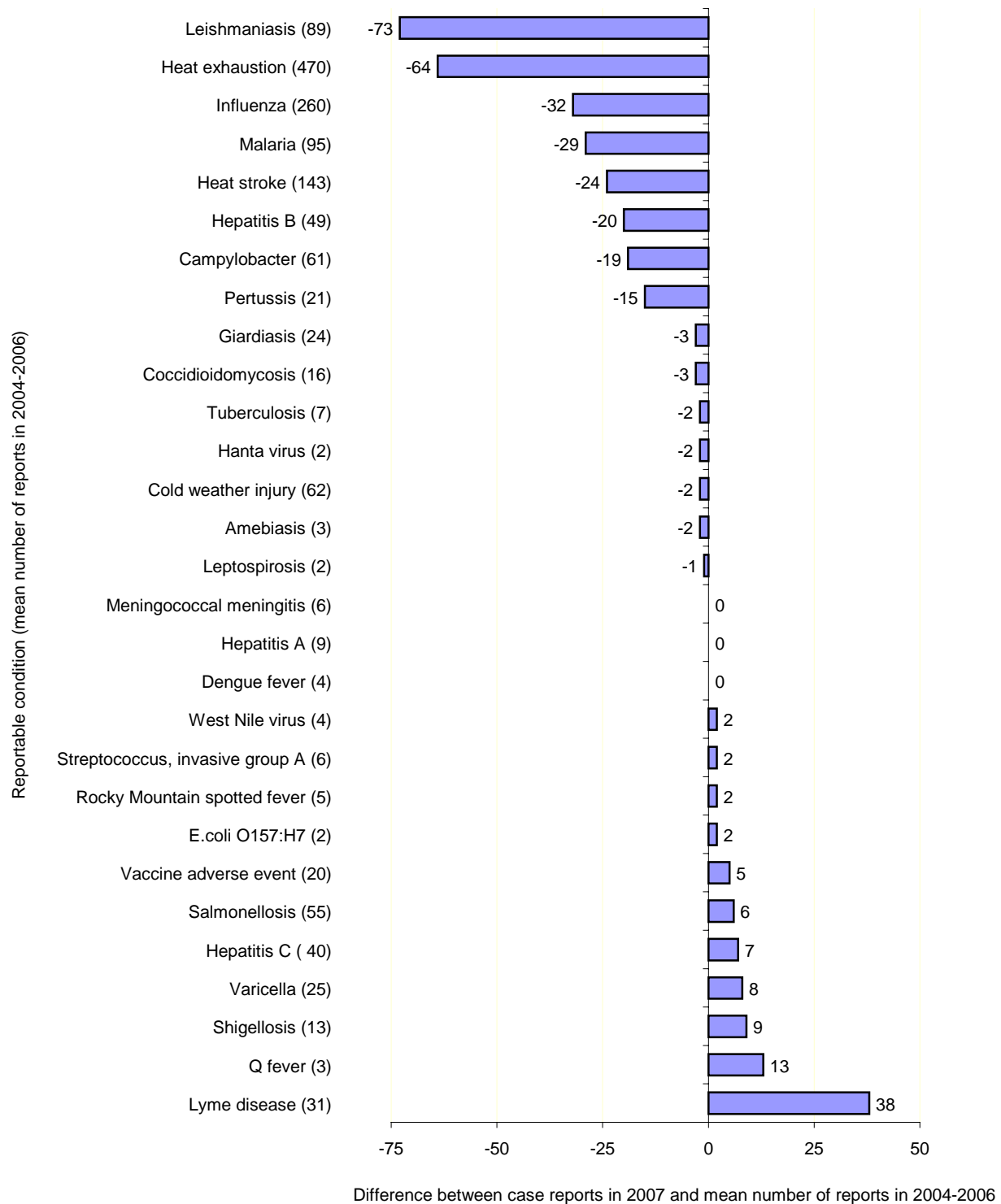
Diagnosis†	2003	2004	2005	2006	2007
All reportable events	16,000	15,244	13,388	12,556	14,712
Amebiasis	1	1	6	3	1
Anthrax	0	0	0	0	0
Biological warfare agent exposure	0	1	0	0	1
Botulism	0	0	0	0	1
Brucellosis	1	1	2	2	3
Campylobacter	59	65	66	52	42
Carbon monoxide poisoning	0	0	1	3	1
Chemical agent exposure	0	1	0	0	0
Chlamydia	11,466	10,990	9,407	9,186	11,260
Cholera	0	0	0	3	1
Coccidioidomycosis	6	3	15	29	13
Cold weather, frostbite	40	66	35	38	38
Cold weather, hypothermia	3	1	2	3	11
Cold weather, immersion type	12	6	2	4	2
Cold weather, unspecified	9	6	15	7	9
Cryptosporidiosis	1	1	1	1	0
Cyclospora	0	1	0	0	0
Dengue fever	0	5	4	4	4
Diphtheria	0	0	0	0	0
E. coli O157:H7	0	2	3	2	4
Ehrlichiosis	1	0	2	1	1
Encephalitis	2	3	1	0	1
Filariasis	0	1	0	0	0
Giardiasis	31	33	26	14	21
Gonorrhea	2,017	1,894	1,769	1,752	1,793
H. influenzae, invasive	2	0	0	2	1
Hantavirus infection	2	0	5	2	0
Heat exhaustion	246	435	524	450	406
Heat stroke	101	175	138	117	119
Hemorrhagic fever	1	0	0	0	0
Hepatitis A	11	11	9	7	9
Hepatitis B	59	58	55	34	29
Hepatitis C	24	46	45	29	47
Influenza	417	165	444	171	228
Lead poisoning	0	0	0	0	1
Legionellosis	2	0	0	0	1
Leishmaniasis, cutaneous	521	214	33	12	14
Leishmaniasis, mucocutaneous	0	0	0	0	0
Leishmaniasis, unspecified	0	1	2	1	2
Leishmaniasis, visceral	2	2	1	1	0
Leprosy	1	1	0	0	0
Leptospirosis	5	2	2	2	1

Diagnosis†	2003	2004	2005	2006	2007
Listeriosis	1	0	0	0	0
Lyme disease	15	29	38	26	69
Malaria, falciparum	10	42	7	11	5
Malaria, malariae	0	0	0	3	0
Malaria, ovale	0	1	0	3	1
Malaria, unspecified	28	21	31	50	26
Malaria, vivax	54	28	42	47	34
Measles	0	0	1	0	1
Meningococcal meningitis	4	3	9	6	6
Meningococcal septicemia	1	0	0	0	0
Mumps	1	0	1	4	2
Pertussis	2	37	13	14	6
Plague	0	0	0	0	0
Poliomyelitis	0	0	0	0	0
Q fever	5	1	3	4	16
Rabies, human	0	0	1	0	0
Relapsing fever	0	0	1	0	0
Rheumatic fever, acute	0	1	0	1	0
Rift Valley fever	0	0	0	0	0
Rocky Mountain spotted fever	0	8	4	2	7
Rubella	0	0	0	0	0
Salmonellosis	67	52	51	62	61
Schistosomiasis	0	0	0	0	0
Shigellosis	53	17	18	5	22
Smallpox	0	0	1	0	0
Streptococcus, group A, invasive	9	6	4	8	8
Syphilis, congenital	5	10	0	0	1
Syphilis, latent	17	21	27	20	37
Syphilis, primary/secondary	43	68	47	44	52
Syphilis, tertiary	4	1	1	3	3
Tetanus	0	0	0	0	0
Toxic shock syndrome	1	0	1	0	0
Trichinosis	2	3	1	1	5
Trypanosomiasis	0	0	0	0	0
Tuberculosis, pulmonary	9	9	6	7	5
Tularemia	1	0	0	0	0
Typhoid fever	1	0	0	1	1
Typhus fever	1	0	0	0	0
Urethritis, non-gonococcal	503	644	417	254	215
Vaccine, adverse event	81	22	24	14	25
Varicella, active duty only	36	27	23	26	33
West Nile Virus	3	2	1	8	6
Yellow fever	0	0	0	0	0

*Events reported by April 7, 2008.

†Tri-Service Reportable Events, May 2004.

Figure 1. Number of reportable events* among active component service members, U.S. Armed Forces, in 2007† compared to the mean during 2004-2006‡



*Sexually transmitted diseases are excluded.

†Events reported by April 7, 2008.

‡For diseases with three year totals of at least six cases. Averages are rounded to the nearest integer.

Table 3. Reportable events* at U.S. Army medical treatment facilities,† active component members, 2003-2007

Diagnosis†	2003	2004	2005	2006	2007
All reportable events	8,761	8,947	9,143	9,287	9,258
Amebiasis	0	1	2	2	0
Anthrax	0	0	0	0	0
Biological warfare agent exposure	0	1	0	0	1
Botulism	0	0	0	0	0
Brucellosis	1	1	2	1	2
Campylobacter	36	35	52	46	32
Carbon monoxide poisoning	0	0	0	2	0
Chemical agent exposure	0	0	0	0	0
Chlamydia	5,581	5,876	6,057	6,575	6,706
Cholera	0	0	0	1	0
Coccidioidomycosis	1	2	5	3	3
Cold weather, frostbite	40	65	27	34	37
Cold weather, hypothermia	3	0	1	2	8
Cold weather, immersion type	12	6	2	4	2
Cold weather, unspecified	9	5	14	7	9
Cryptosporidiosis	1	1	1	1	0
Cyclospora	0	1	0	0	0
Dengue fever	0	1	2	2	3
Diphtheria	0	0	0	0	0
E. coli O157:H7	0	0	2	2	1
Ehrlichiosis	0	0	2	1	1
Encephalitis	0	0	0	0	0
Filariasis	0	1	0	0	0
Giardiasis	18	19	14	9	12
Gonorrhea	1,317	1,340	1,458	1,398	1,335
H. influenzae, invasive	2	0	0	1	1
Hantavirus infection	2	0	4	1	0
Heat exhaustion	132	301	364	380	312
Heat stroke	93	168	133	110	116
Hemorrhagic fever	1	0	0	0	0
Hepatitis A	8	7	7	5	1
Hepatitis B	13	24	29	20	8
Hepatitis C	6	25	34	22	25
Influenza	197	90	249	101	124
Lead poisoning	0	0	0	0	1
Legionellosis	0	0	0	0	1
Leishmaniasis, cutaneous	518	210	31	12	13
Leishmaniasis, mucocutaneous	0	0	0	0	0
Leishmaniasis, unspecified	0	0	1	0	1
Leishmaniasis, visceral	2	2	0	1	0
Leprosy	0	1	0	0	0
Leptospirosis	5	1	2	2	1
Listeriosis	1	0	0	0	0
Lyme disease	11	20	25	20	44
Malaria, falciparum	4	8	4	8	4
Malaria, malariae	0	0	0	3	0
Malaria, ovale	0	1	0	1	0
Malaria, unspecified	21	16	29	50	24
Malaria, vivax	49	25	40	44	33
Measles	0	0	1	0	0
Meningococcal meningitis	2	1	5	5	4
Meningococcal septicemia	0	0	0	0	0
Mumps	1	0	1	3	0
Pertussis	0	20	7	8	3
Plague	0	0	0	0	0
Poliomyelitis	0	0	0	0	0
Q fever	3	1	2	2	15
Rabies, human	0	0	0	0	0
Relapsing fever	0	0	1	0	0
Rheumatic fever, acute	0	0	0	1	0
Rift Valley fever	0	0	0	0	0
Rocky Mountain spotted fever	0	6	3	1	2
Rubella	0	0	0	0	0
Salmonellosis	31	30	26	43	33
Schistosomiasis	0	0	0	0	0
Shigellosis	36	15	12	3	17
Smallpox	0	0	0	0	0
Streptococcus, group A, invasive	4	2	2	8	7
Syphilis, congenital	1	1	0	0	0
Syphilis, latent	7	11	22	18	27
Syphilis, primary/secondary	20	38	32	31	33
Syphilis, tertiary	4	0	1	3	3
Tetanus	0	0	0	0	0
Toxic shock syndrome	0	0	1	0	0
Trichinosis	0	1	0	1	5
Trypanosomiasis	0	0	0	0	0
Tuberculosis, pulmonary	4	5	3	5	4
Tularemia	1	0	0	0	0
Typhoid fever	0	0	0	1	1
Typhus fever	0	0	0	0	0
Urethritis, non-gonococcal	460	520	396	251	212
Vaccine, adverse event	77	21	21	5	10
Varicella, active duty only	23	20	14	19	15
West Nile Virus	3	1	0	8	6
Yellow fever	0	0	0	0	0

*Events reported by April 7, 2008

†Tri-Service Reportable Events, May 2004

Table 3. Reportable events* at U.S. Navy medical treatment facilities,† active component members, 2003-2007

Diagnosis†	2003	2004	2005	2006	2007
All reportable events	1,726	1,680	1,334	1,322	1,586
Amebiasis	0	0	2	0	0
Anthrax	0	0	0	0	0
Biological warfare agent exposure	0	0	0	0	0
Botulism	0	0	0	0	0
Brucellosis	0	0	0	1	1
Campylobacter	1	3	3	6	2
Carbon monoxide poisoning	0	0	0	0	0
Chemical agent exposure	0	0	0	0	0
Chlamydia	1,254	1,089	900	945	1,230
Cholera	0	0	0	0	0
Coccidioidomycosis	5	1	9	24	3
Cold weather, frostbite	0	0	0	0	0
Cold weather, hypothermia	0	1	1	1	0
Cold weather, immersion type	0	0	0	0	0
Cold weather, unspecified	0	0	0	0	0
Cryptosporidiosis	0	0	0	0	0
Cyclospora	0	0	0	0	0
Dengue fever	0	3	2	1	1
Diphtheria	0	0	0	0	0
E. coli O157:H7	0	0	0	0	1
Ehrlichiosis	1	0	0	0	0
Encephalitis	0	1	1	0	1
Filariasis	0	0	0	0	0
Giardiasis	4	8	2	2	3
Gonorrhea	240	214	150	201	190
H. influenzae, invasive	0	0	0	0	0
Hantavirus infection	0	0	1	0	0
Heat exhaustion	102	128	160	70	78
Heat stroke	8	6	5	7	2
Hemorrhagic fever	0	0	0	0	0
Hepatitis A	0	2	1	0	1
Hepatitis B	4	7	11	8	10
Hepatitis C	3	4	5	4	11
Influenza	2	1	16	8	6
Lead poisoning	0	0	0	0	0
Legionellosis	0	0	0	0	0
Leishmaniasis, cutaneous	0	2	0	0	0
Leishmaniasis, mucocutaneous	0	0	0	0	0
Leishmaniasis, unspecified	0	1	0	1	0
Leishmaniasis, visceral	0	0	1	0	0
Leprosy	0	0	0	0	0
Leptospirosis	0	1	0	0	0
Listeriosis	0	0	0	0	0
Lyme disease	3	4	4	4	9
Malaria, falciparum	3	33	3	2	1
Malaria, malariae	0	0	0	0	0
Malaria, ovale	0	0	0	0	1
Malaria, unspecified	3	4	2	0	1
Malaria, vivax	3	0	1	0	0
Measles	0	0	0	0	0
Meningococcal meningitis	2	0	2	1	0
Meningococcal septicemia	1	0	0	0	0
Mumps	0	0	0	1	0
Pertussis	0	0	2	2	1
Plague	0	0	0	0	0
Poliomyelitis	0	0	0	0	0
Q fever	0	0	1	2	0
Rabies, human	0	0	1	0	0
Relapsing fever	0	0	0	0	0
Rheumatic fever, acute	0	0	0	0	0
Rift Valley fever	0	0	0	0	0
Rocky Mountain spotted fever	0	2	0	1	4
Rubella	0	0	0	0	0
Salmonellosis	18	5	14	13	5
Schistosomiasis	0	0	0	0	0
Shigellosis	5	1	0	1	1
Smallpox	0	0	0	0	0
Streptococcus, group A, invasive	2	2	0	0	1
Syphilis, congenital	1	7	0	0	0
Syphilis, latent	2	4	2	2	8
Syphilis, primary/secondary	10	14	9	7	7
Syphilis, tertiary	0	1	0	0	0
Tetanus	0	0	0	0	0
Toxic shock syndrome	1	0	0	0	0
Trichinosis	0	0	0	0	0
Trypanosomiasis	0	0	0	0	0
Tuberculosis, pulmonary	4	4	2	2	0
Tularemia	0	0	0	0	0
Typhoid fever	0	0	0	0	0
Typhus fever	1	0	0	0	0
Urethritis, non-gonococcal	36	122	20	3	0
Vaccine, adverse event	4	1	0	1	0
Varicella, active duty only	3	4	1	1	7
West Nile Virus	0	0	0	0	0
Yellow fever	0	0	0	0	0

*Events reported by April 7, 2008

†Tri-Service Reportable Events, May 2004

Table 4. Reportable events* at U.S. Air Force medical treatment facilities,† active component members, 2003-2007

Diagnosis†	2003	2004	2005	2006	2007
All reportable events	5,513	4,617	2,911	1,947	3,868
Amebiasis	1	0	2	1	1
Anthrax	0	0	0	0	0
Biological warfare agent exposure	0	0	0	0	0
Botulism	0	0	0	0	1
Brucellosis	0	0	0	0	0
Campylobacter	22	27	11	0	8
Carbon monoxide poisoning	0	0	1	1	1
Chemical agent exposure	0	1	0	0	0
Chlamydia	4,631	4,025	2,450	1,666	3,324
Cholera	0	0	0	2	1
Coccidioidomycosis	0	0	1	2	7
Cold weather, frostbite	0	1	8	4	1
Cold weather, hypothermia	0	0	0	0	3
Cold weather, immersion type	0	0	0	0	0
Cold weather, unspecified	0	1	1	0	0
Cryptosporidiosis	0	0	0	0	0
Cyclospora	0	0	0	0	0
Dengue fever	0	1	0	1	0
Diphtheria	0	0	0	0	0
E. coli O157:H7	0	2	1	0	2
Ehrlichiosis	0	0	0	0	0
Encephalitis	2	2	0	0	0
Filariasis	0	0	0	0	0
Giardiasis	9	6	10	3	6
Gonorrhea	460	340	161	153	268
H. influenzae, invasive	0	0	0	1	0
Hantavirus infection	0	0	0	1	0
Heat exhaustion	12	6	0	0	16
Heat stroke	0	1	0	0	1
Hemorrhagic fever	0	0	0	0	0
Hepatitis A	3	2	1	2	7
Hepatitis B	42	27	15	6	11
Hepatitis C	15	17	6	3	11
Influenza	218	74	179	62	98
Lead poisoning	0	0	0	0	0
Legionellosis	2	0	0	0	0
Leishmaniasis, cutaneous	3	2	2	0	1
Leishmaniasis, mucocutaneous	0	0	0	0	0
Leishmaniasis, unspecified	0	0	1	0	1
Leishmaniasis, visceral	0	0	0	0	0
Leprosy	1	0	0	0	0
Leptospirosis	0	0	0	0	0
Listeriosis	0	0	0	0	0
Lyme disease	1	5	9	2	16
Malaria, falciparum	3	1	0	1	0
Malaria, malariae	0	0	0	0	0
Malaria, ovale	0	0	0	2	0
Malaria, unspecified	4	1	0	0	1
Malaria, vivax	2	3	1	3	1
Measles	0	0	0	0	1
Meningococcal meningitis	0	2	2	0	2
Meningococcal septicemia	0	0	0	0	0
Mumps	0	0	0	0	2
Pertussis	2	17	4	4	2
Plague	0	0	0	0	0
Poliomyelitis	0	0	0	0	0
Q fever	2	0	0	0	1
Rabies, human	0	0	0	0	0
Relapsing fever	0	0	0	0	0
Rheumatic fever, acute	0	1	0	0	0
Rift Valley fever	0	0	0	0	0
Rocky Mountain spotted fever	0	0	1	0	1
Rubella	0	0	0	0	0
Salmonellosis	18	17	11	6	23
Schistosomiasis	0	0	0	0	0
Shigellosis	12	1	6	1	4
Smallpox	0	0	1	0	0
Streptococcus, group A, invasive	3	2	2	0	0
Syphilis, congenital	3	2	0	0	1
Syphilis, latent	8	6	3	0	2
Syphilis, primary/secondary	13	16	6	6	12
Syphilis, tertiary	0	0	0	0	0
Tetanus	0	0	0	0	0
Toxic shock syndrome	0	0	0	0	0
Trichinosis	2	2	1	0	0
Trypanosomiasis	0	0	0	0	0
Tuberculosis, pulmonary	1	0	1	0	1
Tularemia	0	0	0	0	0
Typhoid fever	1	0	0	0	0
Typhus fever	0	0	0	0	0
Urethritis, non-gonococcal	7	2	1	0	3
Vaccine, adverse event	0	0	3	8	15
Varicella, active duty only	10	3	8	6	11
West Nile Virus	0	1	1	0	0
Yellow fever	0	0	0	0	0

*Events reported by April 7, 2008

†Tri-Service Reportable Events, May 2004

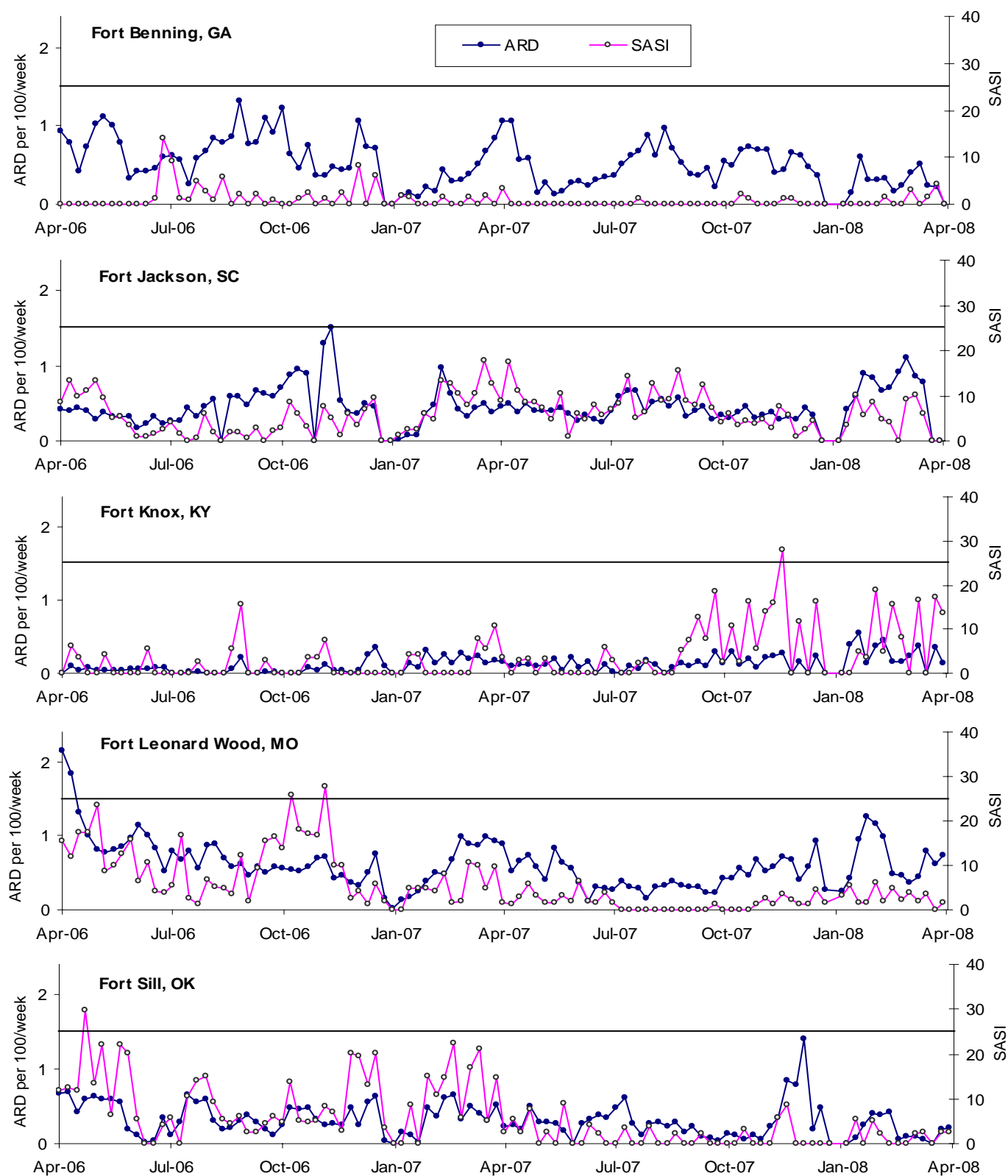
of installation-specific reports at a central level enables the detection, characterization, and tracking of remote, widely disseminated, and/or spreading health threats.

General summaries of reported medical conditions should be interpreted cautiously. For example, notifiable conditions are incompletely reported; and the completeness of reporting varies across Services, medical facilities, locations, settings, and conditions themselves.³⁻⁵ In addition, there are few or no reports of notifiable conditions among service members who are engaged in field training exercises or deployments — unless affected individuals receive care for the conditions at permanent military medical facilities or the cases are reported to military preventive medicine/public health officials at reporting sites. Thus, complete assessments of frequencies, rates, and trends of notifiable conditions require reviews of more than reported cases alone.

References:

1. Rubertone MV, Brundage JF. The Defense Medical Surveillance System and the Department of Defense Serum Repository: glimpses of the future of comprehensive public health surveillance. *Am J Pub Health* 2002 Dec;92(12):1900-4.
2. Tri-Service consensus list of reportable medical events: Completeness and timeliness of reporting in the Army, January-June 1998. *MSMR*, 1998;4(8):2-11.
3. Nagaraj BE. Completeness and timeliness of reporting of hospitalized notifiable conditions, active duty servicemembers, U.S. Army medical treatment facilities, 1998-2003. *MSMR*, 2004, 10(4):9-13.
4. Completeness of reporting of hospitalized notifiable conditions among active duty servicemembers, U.S. Naval medical treatment facilities, 1998-2003. *MSMR*, 2004, 10(4):14-7.
5. Completeness of reporting of hospitalized notifiable conditions among active duty servicemembers, U.S. Air Force medical treatment facilities, 1998-2003. *MSMR*, 2004, 10(4):18-21.

Acute respiratory disease (ARD) and streptococcal pharyngitis rates (SASI*), basic combat training centers, U.S. Army, by week, April 2006-April 2008



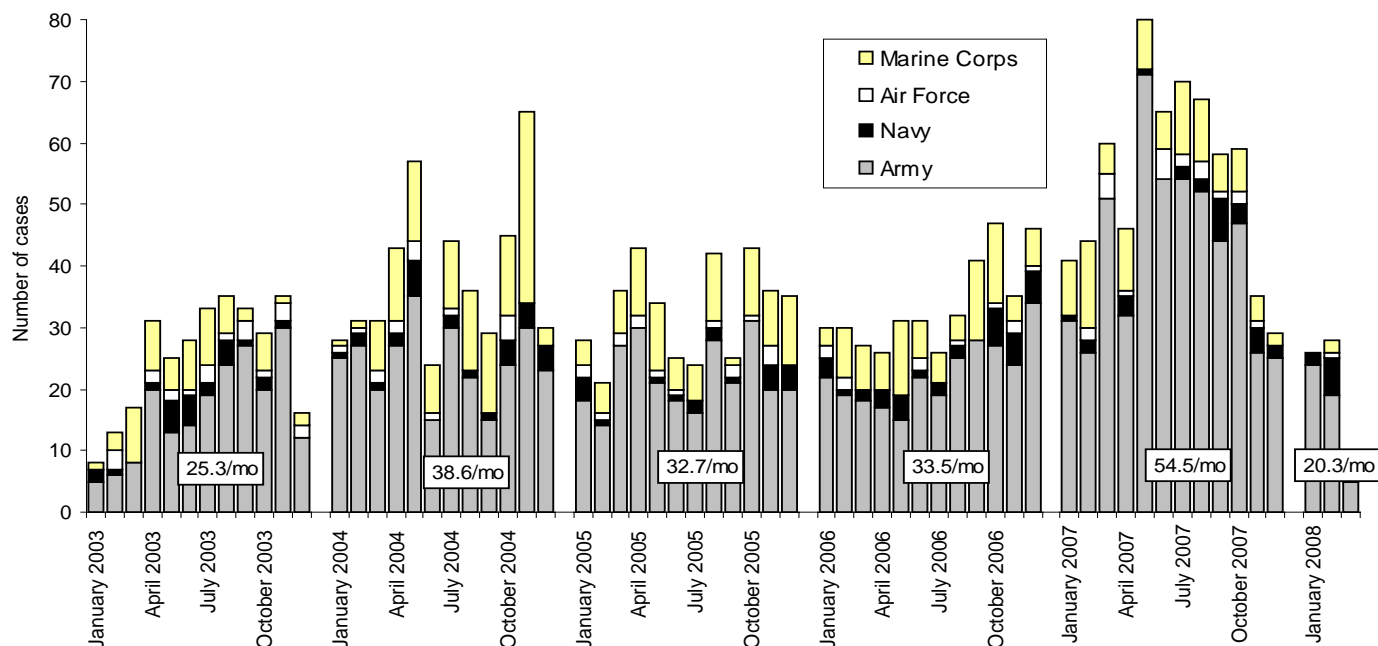
* Streptococcal-ARD surveillance index (SASI) = ARD rate x % positive cultures for group A streptococcus among ARD cases

ARD rate = cases per 100 trainees per week

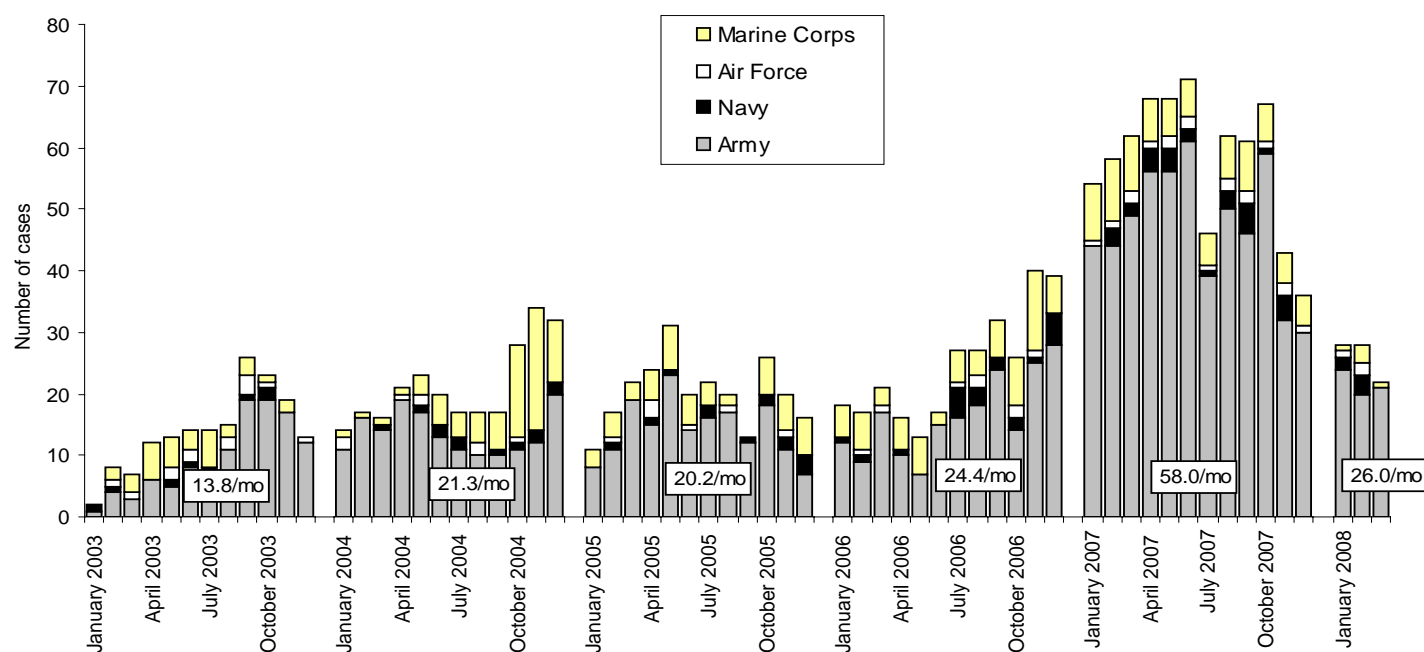
ARD rate ≥ 1.5 or SASI ≥ 25.0 for 2 consecutive weeks are surveillance indicators of epidemics

Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003-March 2008

Traumatic brain injury, hospitalizations (ICD-9: 800-804, 850-854, 959.01)*



Traumatic brain injury, multiple ambulatory visits (without hospitalization), (ICD-9: 800-804, 850-854, 959.01)†



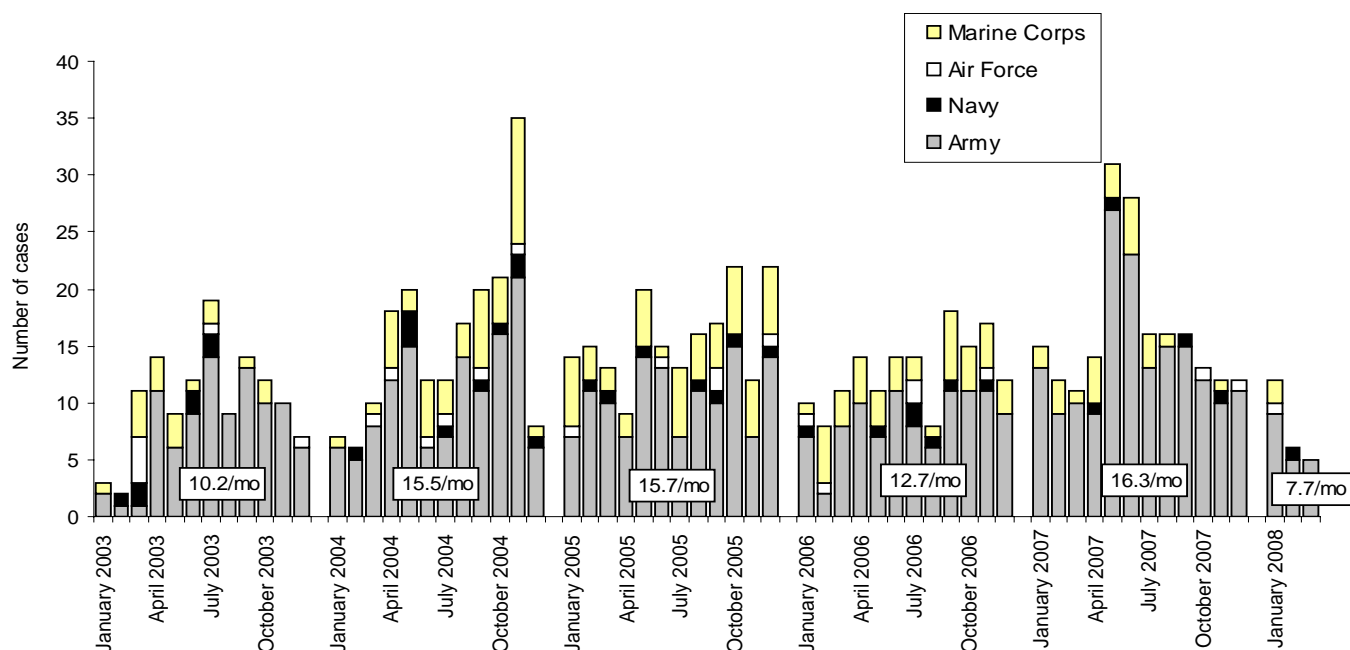
Reference: Army Medical Surveillance Activity. Traumatic brain injury among members of active components, U.S. Armed Forces, 2002-2007. *MSMR*. Aug 2007; 14(5):2-6.

*Indicator diagnosis (one per individual) during a hospitalization while deployed to/within 30 days of returning from OEF/OIF.

†Two or more ambulatory visits at least 7 days apart while deployed to/within 30 days of returning from OEF/OIF.

Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003-March 2008

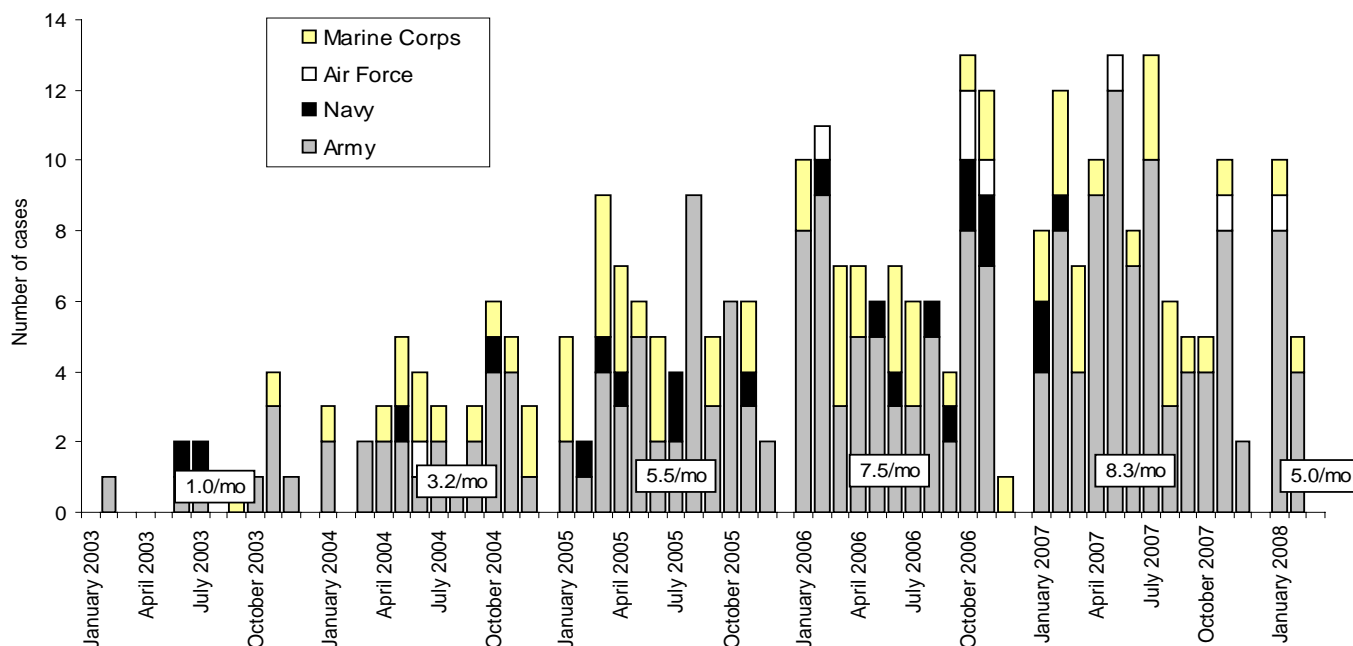
Amputations (ICD-9: 887, 896, 897, V49.6 to V49.7, PR 84.0 to PR 84.1)*



Reference: Army Medical Surveillance Activity. Deployment-related condition of special surveillance interest: amputations. Amputations of lower and upper extremities, U.S. Armed Forces, 1990-2004. *MSMR*. Jan 2005;11(1):2-6.

*Indicator diagnosis (one per individual) during a hospitalization or ambulatory visit while deployed to/within 365 days of returning from OEF/OIF.

Heterotopic ossification (ICD-9: 728.12, 728.13, 728.19)†

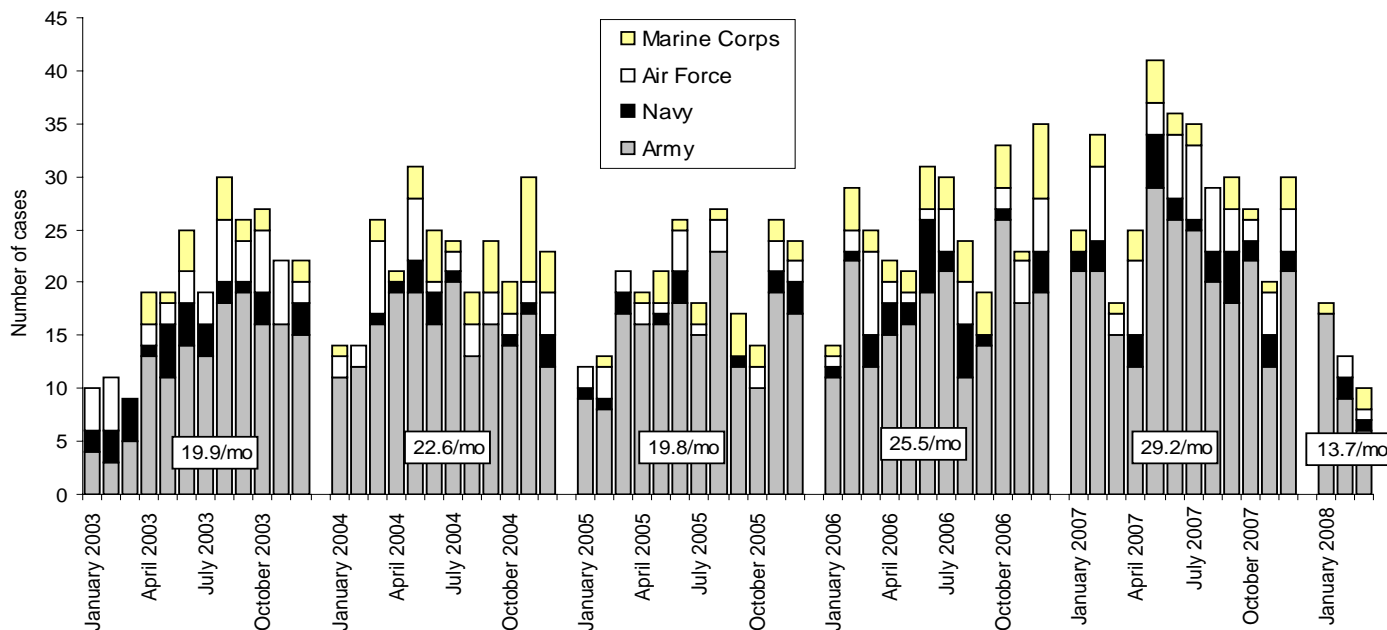


Reference: Army Medical Surveillance Activity. Heterotopic ossification, active components, U.S. Armed Forces, 2002-2007. *MSMR*. Aug 2007; 14(5):7-9.

†One diagnosis during a hospitalization or two or more ambulatory visits at least 7 days apart while deployed to/within 365 days of returning from OEF/OIF.

Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003-March 2008

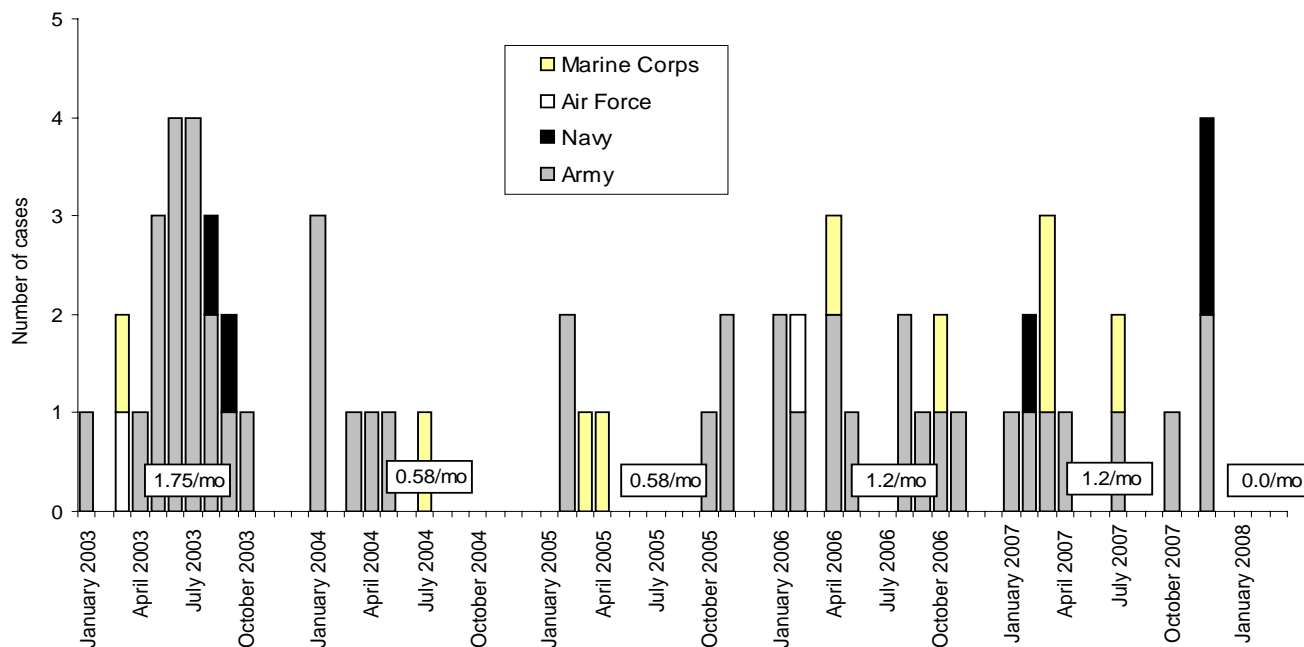
Deep vein thrombophlebitis/pulmonary embolus (ICD-9: 415.1, 451.1, 451.81, 451.83, 451.89, 453.2, 453.40 to 453.42 and 453.8)*



Reference: Isenbarger DW, Atwood JE, Scott PT, et al. Venous thromboembolism among United States soldiers deployed to Southwest Asia. *Thromb Res.* 2006;117(4):379-83.

*Indicator diagnosis (one per individual) during a hospitalization while deployed to/within 90 days of returning from OEF/OIF.

Severe acute pneumonia (ICD-9: 518.81, 518.82, 518.3, 480-487, 786.09)†



Reference: Army Medical Surveillance Activity. Deployment-related condition of special surveillance interest: severe acute pneumonia. Hospitalizations for acute respiratory failure (ARF)/acute respiratory distress syndrome (ARDS) among participants in Operation Enduring Freedom/Operation Iraqi Freedom, active components, U.S. Armed Forces, January 2003-November 2004. *MSMR.* Nov/Dec 2004;10(6):6-7.

†Indicator diagnosis (one per individual) during a hospitalization or ambulatory visit while deployed to/within 30 days of returning from OEF/OIF.

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The *Medical Surveillance Monthly Report* (MSMR) is prepared by the Armed Forces Health Surveillance Center (AFHSC), US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

Data in the MSMR are provisional, based on reports and other sources of data available to AFHSC.

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